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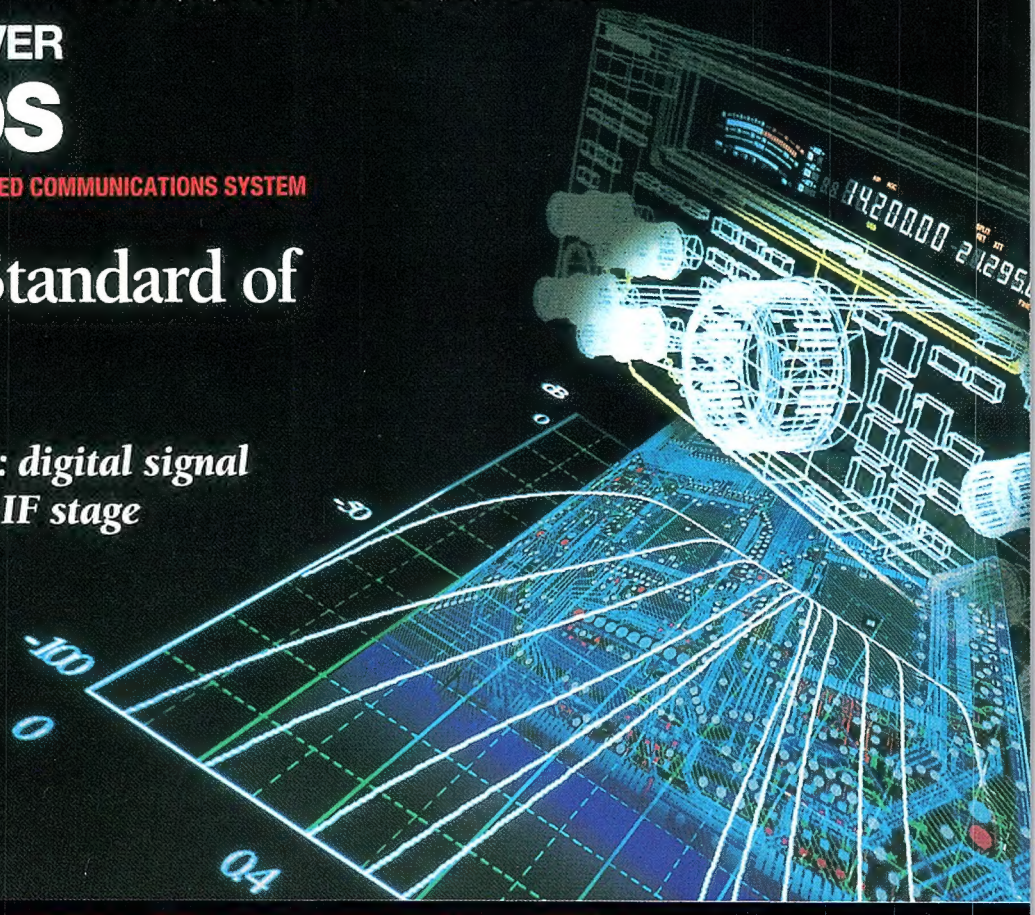

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BACK ISSUES
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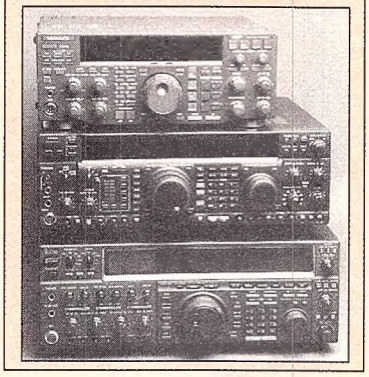
IT'S ALL IN THIS ISSUE

9 REVIEW: UNIDEN UH-100 UHF CB
An all-new CB rig is news these days, and this gem from Uniden goes straight to the top of the class. Ken Reynolds reports...

15 REVIEW: OPTOELECTRONICS XPLORER
Here's a unique little gadget with a very big name. It's a receiver which locks onto any strong nearby signals, displays the received frequency and lets you hear the audio. What next?!

24 CLASH OF THE TITANS
We've been talking about this... a multi-way, no holds barred HF shootout. The Icom IC-775 faces the Yaesu FT-1000MP and the Kenwood TS-870S — and throw in the IC-781 for good measure.



47 REVIEW: ICOM IC-T7A DUAL-BAND HANDIE
Here's a really small radio with really big credentials. It's Icom's latest baby 2m / 70cm HT, and it gets a whopping 750MHz receive range. Wow!

59 SLOW-SCAN TV: IS IT FOR ME?
One of the "forgotten" modes. That's how Jim Smith, VK9NS, sees SSTV. Once a popular mode, SSTV still has a lot to offer... This is part one of a three-part series.

63 EMERGENCY!!
Dammit! The world's on fire, the ambos are rolling and the coppers are in a tizz — and I can't find them! Here's where to tune to find what you need. This month Victoria.

72 ODDS AND ENDS
Here are some of the hints and tips which can make life easy in the average radio operator's shack. See if you can think of some and send them in!

79 WIN A YAESU FT-50R!
Here's your second and final chance to win a great Yaesu FT-50R dual-band transceiver.

82 BAUDWALKING INDEX
Our prolific Internet man, Tom Sundstrom, has indexed all the net sites we've visited together in the last six months. Here's part two of the current index.

83 SUBSCRIPTION PRIZE
We recently ran a huge competition for subscribers. Did you win...?

90 THE HISTORY OF TELEGRAPHY
Here's a brief but really fascinating look at telegraphy in all its forms. Where and when did it all start?

Don't miss our Christmas issue — it's out December 18!

7	Editorial
12	'In Flight' — Air Band information
18	Modifications worth knowing
22	Weather Satellites
32	Utility DXing — where to look
35	Trunking frequencies
36	Listening Post — for the Scan Fan
38	'Baudwalking' — new on the Internet
42	Scan Secrets — handy hints
52	11M DX International — CB band DX
54	Online — communications software
56	Here and There in Amateur Radio
58	Feedback. Readers' views
66	DX & Band & IOTA — amateur DXing
75	Shortwave Listening
80	Gone Tropo — happenings on VHF
84	DX Update... Stop Press!
86	ACBRO CB News
88	IPS' December propagation charts
91	Subscribe so you don't miss a thing!
92	Classified Adverts
96	UHF CB Repeater List

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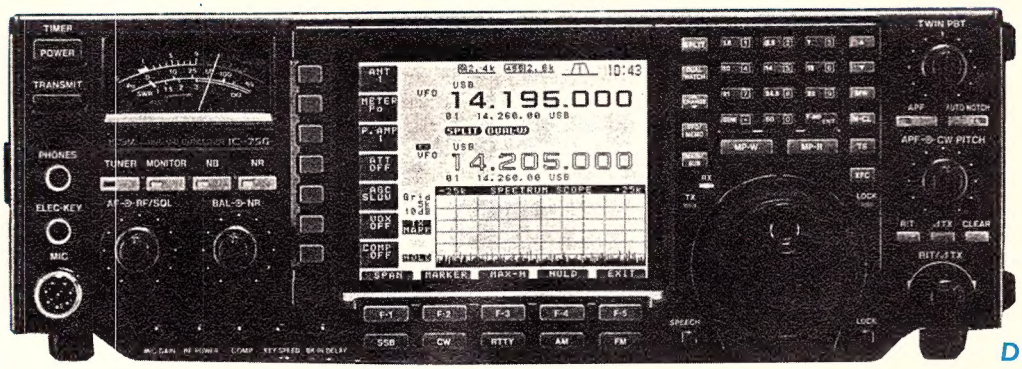

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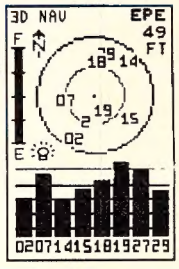

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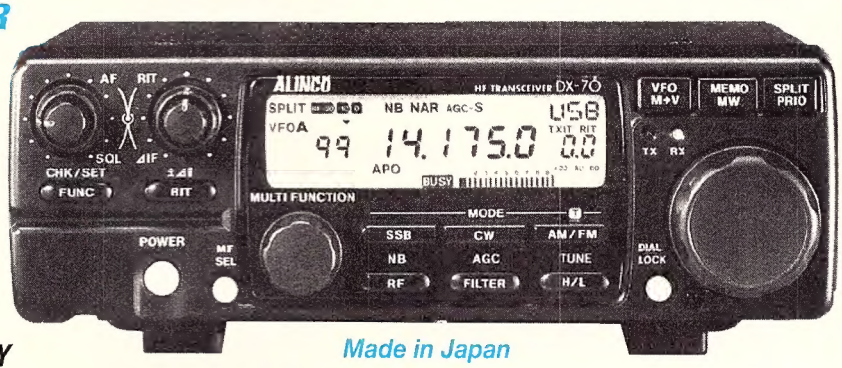

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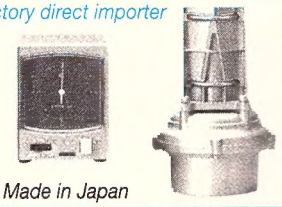

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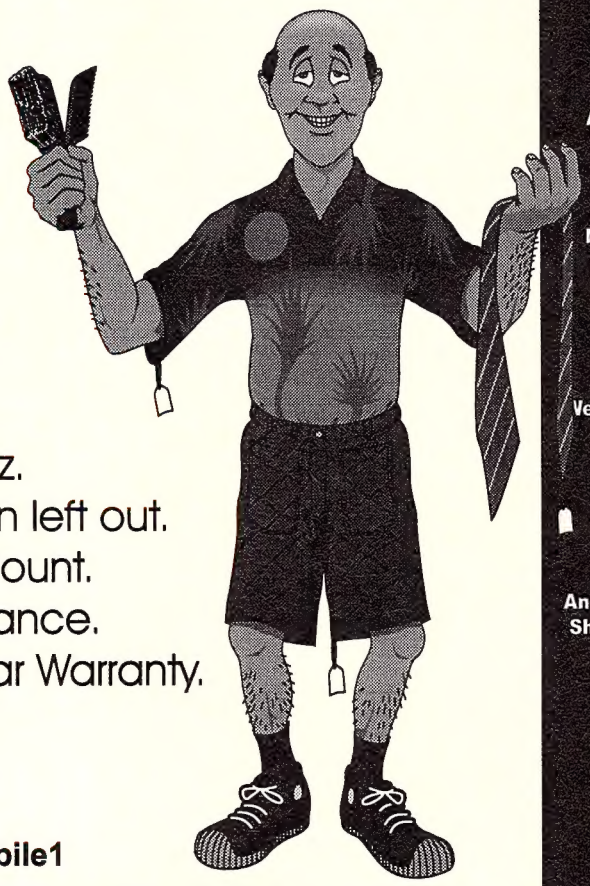

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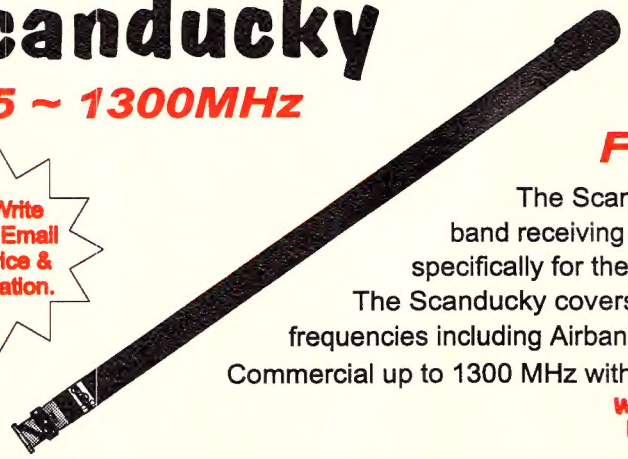

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Editorial Comments...

Amateur radio operators of a few years standing will doubtless remember a range of kits made by the **Heath** organisation. Heathkit took kit-building to a new level, making projects which were fun to build, challenging to the constructor, of absolutely magnificent quality, and long-lasting.

And they were certainly no toys. The range included simple projects, but it also had such gems as complete HF transceivers and linear amplifiers, and these, when correctly assembled, worked very well indeed.

You chose your project from an impressive annual catalogue of items, and in later years this ran to well over 100 pages. Not only were the catalogues eye-openers; so were the instruction books which came with each project. Each manual was wonderful, explaining the theory of operation and going through step-by-step construction procedures in a very clear manner.

While they were far from cheap in this country, these kits' reputation was deservedly first rate. As I remember it, in its final years Heath was part of a larger outfit which made Zenith computers and, in the final days, either the kit side of things slowed right down or the company simply went off in another direction. Whichever it was, Heathkit has now moved into a fondly-remembered part of history.

One might wonder what led to the demise of Heathkit. Was it the ready availability of commercially-made amateur products, particularly the products from Japan? You have to remember that, 20 years ago, the Australian currency bought several *hundreds* of Japanese Yen (today we've clawed back to about ¥80 to the A$), and companies like Yaesu were producing literally thousands of numbers like the FT-101 and FT-200 HF transceivers which arrived here for a fraction of the price of anything comparable from the USA — including the kits. An interesting twist, having mentioned the venerable old FT-101: Heathkit had a kit version of just that transceiver and, some years later, a kit version of the FT-747 solid state rig.

But when a very young Icom released the IC-22, a two metre, crystal-locked FM mobile, things changed. The IC-22 and its successors carved their way through ranks of unbelieving amateurs and changed VHF communications as we knew it.

Radios like these brought a number of very significant changes to amateur radio. At a time when CB was undergoing a revolutionary explosion in this country, amateur radio was also being shaken to its core by the sudden affordability of quality, purpose-built Japanese equipment.

So who would want to make do with WWII technology in the shape of junked Army transmitters or huge single-channel ex-taxi or concrete truck dinosaurs? While those radios may actually *worked* okay, the commercial gear was new, mostly solid-state (certainly at VHF and up)... and ridiculously cheap for what it offered. (For the other side of the story, see Gone Tropo on Page 80 of this issue.) In fact, Icom remains the only mainstream radio manufacturer to have not ever manufactured equipment with valves... even in its HF gear and linear amplifiers.

But where is the challenge and the *amateur* part of amateur radio in operating a radio that someone else has built, no matter how good it may be? What has become of the tradition of the service? How many times in the last 12 months have you heard somebody at the other end of a contact say with pride, "Actually, Old Man, it's a home-brewed transceiver. I built it myself." or "Oh, I just took an old commercial box and extensively modified its guts to work on this band..."?

Amateur radio, along with all of the other aspects of the radio hobby, is far more than just building a piece of gear. The experimentation extends to many other areas, including antenna design, propagation experiments, developing and using data transmission protocols, and so many other fascinating areas.

Of course, there are those to whom the most fascinating part of amateur radio is the communications aspect itself — being able to talk to so many people from so many walks of life is really very seductive. Most of our hobby CBers — not those who use CB for business or as a life-line in the bush, rather those who use it for the sheer joy of communicating — fall into that bracket, and most of them would find amateur radio a worthwhile upgrade. Just check out the Feedback letter on Page 58. I got so carried away by it that there was room for only the one letter!

I'll never forget, many years ago, seeing the QSL card of a friend. "Gee, mate, why've you got a picture of a Mixmaster on your card?" I asked innocently. "Because I'm an Appliance Operator!" came the reply. "If it broke, I'd even have to send my crystal set off to get it fixed." That guy may have had no idea about what was inside his radio, yet he was as much a valued member of the fraternity as the most technical of people. He spent years developing ever-better antennas. You should hear his signal!

But hobbies, like fashions, tend to go in cycles and circles, and people seem to be getting interesting in making things again. I asked Dick Smith Electronics why its magnificent six and two metre linear amplifiers and two metre transceiver were no longer available, to be told that the price of those projects would now be prohibitive.

But the Heath tradition *is* coming back. Products from a subsidiary of US-based amateur transceiver manufacturer **Ten Tec** have recently emerged in a Melbourne outlet, and it looks like the Heathkit story all over again. **T-Kit** has a range of all-new kits for you to make, and they look like some real pearlers of ideas. Here's a sample: how about a modern two metre mobile FM rig for just $399? You can upgrade its five watts to 35 for an extra $125, too.

Then there's an eight-watt six metre transverter, which takes your 20 metre SSB or CW signal up to the six metre DX window. Again, the book is truly excellent. We're building one of these at the moment, and will tell you all about it soon. There are also plenty of different receiver projects, an HF-VHF power meter to build for just $98. And that's not the whole range, either, and new kits are being added to the range all the time.

We asked importer Daycom about the kits. How come they look so much like the top quality Heathkits of old? It turns out there's a bit of a link between T-Kit and Heathkit. To quote T-Kit: "We've watched the kit industry with interest since our [Ten Tec's] beginning. In fact, when he was president of Electro-Voice, our chairman, Al Kahn, K4FW, lent a hand and a big load of parts to some Michigan pals starting up a post-war company they named Heathkit."

Al had for years wanted to do something in the kit industry himself. Ten Tec is a very large manufacturer of hardware, making all its own boxes and plastic mouldings in its own factory. The components are all of the best available quality, and the enclosures all look very professional indeed.

There's an even more interesting kit opportunity coming up in a few days time for 10 very lucky and skilled constructors: at the Icom Day on November 30 you can get an **Icom IC-735** HF transceiver kit, no less! Just $735 for a new 735! The boards are all completed, so you just have to plumb the partially-assembled radio together. Should be quite an interesting one, that! There's an advert on page 50 with a bit more info for you...

Now get out there and *build* something!!

Wow! What a month we have for you!

You have another chance to win a superb amateur transceiver, and we announce the winner of a complete radio station — our recent subscription competition — and look at a whole heap of new radio gear.

And, of course, this month is the time for our Big Joust — the no-holds-barred comparison between the top radios from Icom, Kenwood and Yaesu. The story which appears on pages 24 to 29 of this issue is easily the most comprehensive and in-depth transceiver comparison we've presented in more than 20 years of continuous publication.

We hope you find it of interest and use.

In closing this month, we'd like to invite *you* to write for Radio and Communications. Even if you think your writing skills average, we're very interested in all sorts of articles, from construction ideas and projects to, well... just about anything to do with radio.

We'll see you again next month. 73 until then.

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BENELEC

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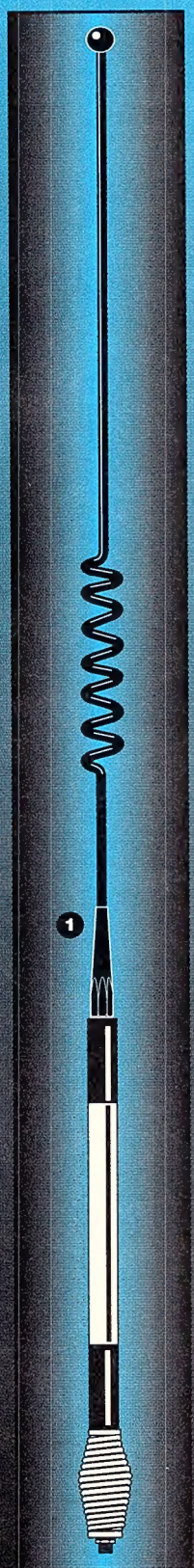

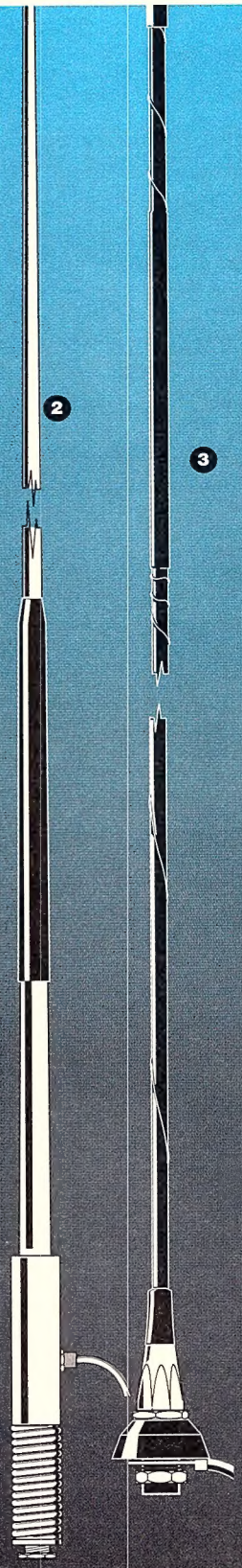

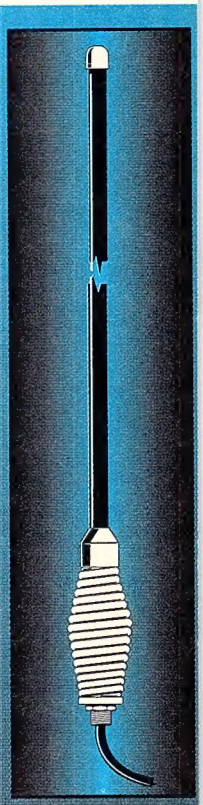

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UNIDEN UH-100
mobile UHF CB transceiver

A review by Ken Reynolds

Have you noticed the way everything *beeps* these days? Are beeps driving you crazy? They're driving *me* crazy! I think every device that beeps should have an optional NO BEEP control for the sake of sanity... or at least so you can press a button without your neighbours knowing you've done it.

We have become such a beep culture in the past few years that any button which fails to emit a beep when pressed is regarded with great suspicion.

Beeps are tolerable if you know you can turn them off... BUT YOU CAN'T!!

It must be pretty obvious where this is leading by now. The new **Uniden UH-100** UHF CB transceiver is a t'riffic little rig with a three-word vocabulary which it exercises at every opportunity: 'beep, beep-beep' (uttered quickly) or even '*beeeeep*'.

Beep on its own generally means '*affirmative*' or a vote of acceptance. Two beeps stands for a function being cancelled or, when applied to channel selection, it means let's count backwards. Then, of course, the one longish beep says... 'naah, can't do that'. So now, having broken the language barrier, we can proceed to the review.

I'm usually pretty scathing about Uniden's lack of imagination when it comes to naming its UHF CRS equipment. In the past we've had double oh ones and oh double ones, oh double sevens and double oh sevens which were just like double oh ones with an 'S' meter. Anyway, with a well deserved fanfare, let me introduce you to the new generation Uniden UH-100 series UHF CRS transceiver — complete with beeps and all.

Anyone familiar with earlier Uniden UHF models will instantly pick up from the leading photograph that the UH-100 looks *nothing* like its predecessors. From the front-mounted loudspeaker to the giant LCD and the press-button channel selector, the UH-100 is a complete departure in appearance from previous models. Even the case dimensions are quite different. (In fact, by amazing coincidence the dimensions are remarkable similar to its main competitor, the GME TX-4000/4200 series.)

The UH-100, just coincidentally, has a similar SO-239 antenna socket on a 10cm long flying lead as well... hmmm. The antenna lead discreetly emerges from the radio's rear panel through a strong strain-relieving, almost flush-fitting gland. And that's just about where the similarities end.

It would not do justice to the UH-100 here by attempting to evaluate all its features as a generalisation, so I have chosen to divide the review into appropriate categories: physical features, transceiver performance, scanning, and SELCAL features.

Physical features

The cabinet colour is predominantly black, and measures 52 mm high by 172 mm wide and only 145 mm deep, which is relatively shallow when compared with previous models. The effective depth is even further reduced by the use of flying leads for antenna and power entry at the rear panel, removing the need for an extra three to four centimetres space behind the set for antenna connector protrusion.

The net worth of this change to the usual Uniden protocol means the UH-100 can be mounted in those quite cramped spaces regularly found in modern cars. Almost zero rear space is required behind the transceiver case.

The UH-100 unencumbered weighs in at 970 grams making the set just about light enough to mount on many plastic automotive fascias.

Removing the light gauge, pressed steel case halves reveals a hybrid, light weight perimeter chassis of aluminium and steel pressings that is strengthened by clever shaping of the materials. The aluminium rear panel is folded to produce very strong mounting points for the steel side rails and has a beefy tab of metal folded under to provide a good heat-sinking arrangement for the RF output transistor.

It is interesting to note that Uniden has maintained its loyalty to a RF power line-up of discrete transistors in preference to the integrated power chip that is so popular these days. This is not a criticism, just an observation...

The fibreglass main printed circuit board occupies almost the whole internal square area of the cabinet and is rigidly attached to the subframe by machine screws.

The all-new design double-sided circuit board makes extensive use of SMD (surface mount device) technology and, interestingly enough, virtually all the components are 'top' mounted with only a meagre scattering of chip components finding their way to the underside of the board. The PCB

....☞

underside is mainly groundplane foil, heavily earth-stitched with plated-through holes and a minimum of printed tracks.

Executed properly, the groundplane stitching technique can produce quite stable, unreactive circuitry that is virtually bug free and an earthing system that is often referred to as being cool. This technique has been extensively used in professional UHF and microwave equipment for more than a quarter of a century and it is encouraging to see it being adopted into UHF CB products. Uniden's approach is possibly a spin-off from the giant, world-wide cellular phone industry in which it is heavily involved.

The front mounted, 8 ohm, 3.5 watt loudspeaker is no pussycat, as you might see from the photograph. It has a substantial magnet that keeps the cone well under control and produces a good, robust audio even up to quite high volume levels.

There is not much to say about the front panel layout — it's pretty self explanatory from the lead photograph.

From left to right, the lower row of soft touch buttons activate these functions:

• **Scrambler** on/off. Controls tone squelch open/quiet; cursor left movement for SELCAL number programming and program mode.

Built-in speech scrambler

The UH-100 offers a basic level of speech privacy with the addition of a simple frequency inversion-type scrambler — encryption device if you want to talk flash.

The device employs only a single code which prevents most other radios from deciphering the audio signal, however, all other UH-100 users can eavesdrop on you at will.

The radio management system prevents the user from selecting SELCAL and SCRAMBLE modes simultaneously. Encrypted transmissions are also excluded from repeater channels — both input and output channels — and channel 11 call channel is also excluded from scrambling. Someone's been thinking...

• SCAN group **MEM**ory programming. Initiates and stores sequences in programming mode & SELCAL mode.

• **SCAN** and SEEK start/stop.

• Toggles selection between **O**pen and **G**roup **S**can.

• **DUPLEX**/repeater operation on/off. Also controls display illumination — three levels, cursor right movement for SELCAL number programming and program mode.

While the UP and DOWN arrow buttons for channel selection are positive and easy to use, I am really disappointed that Uniden could not find space for the traditional rotary channel selection switch. Channel stepping with buttons might be *el-cheapo* to produce but the user control and satisfaction factor is right down there somewhere in the pits.

Why do companies *do* these things to their customers? It takes about 10 seconds to cycle through the whole 40 channels, where a rotary switch only takes a fraction of that time.

The right-hand end of the fascia is a bit cluttered containing the traditional dual concentric combination on/off switch and volume control to the centre and squelch control for the outer circle. You can't see it here, but the squelch control knob is coloured red for easy distinction... check out the picture on the front cover.

With the four-pin microphone receptacle mounted directly below and along side the UP/DOWN buttons, the kindest thing to note is that finger space in this area is limited.

The LCD window is large, and contains two full-height seven-segment digits for the channel display and a mass of other information icons essential to the user, including a frequency display for each channel and an asymmetric bargraph to indicate signal strength and transmitted power.

The UH-100 is supplied with a mobile mounting bracket and screws, microphone and mounting hardware, about 1.5 metres of power cable and an instruction manual which takes the new operator step-by-step through all functions.

There are a couple of errors in the manual I picked up but they are only of lesser consequence.

—According to our book, holding down either of the channel selector buttons will cause the channel selection process to advance or decrement in 10 channel steps. Our test rig stepped *one* channel at a time accompanied by a single beep for each upward increment and — bloody hell! — a *double* beep for each decrement.

—A note about the squelch/mute gate levels indicates it is possible to advance the squelch control to a point where even strong incoming signals will be excluded from detection. The squelch gate set to maximum in the test rig passed signals of greater magnitude than 0.9µV (microvolts).

Performance

The UH-100 receiver sensitivity is quoted by the manufacturer in the handbook as being 0.28µV for 12dB SINAD or better. I measured almost exactly the stated figure under the specified conditions, and after some thought the temptation to tweak became too much and careful adjustment of the front-end resonators improved the performance to 0.2µV for 12dB SINAD. Was this too naughty? I don't think so, unless Uniden had some specific reason for desensitising the unit. Could it be that assembly line alignment policy may have something to do with it, so that when the minimum specification is reached further alignment is ceased??

The signal strength bar graph consists of five uneven length vertical bars ranging from shortest to longest. They responded to these signal levels:

Bar	Signal level
1	0.18µV
2	0.25µV
3	0.37µV
4	0.70µV
5	3.80µV

The squelch threshold setting is so sensitive that it could be easily adjusted to admit signals below the level of 0.1µV. If you dunno much about microvolts, take my word for it — 0.1 of one millionth of one volt is *not* a signal strength to get excited about... unless you can hear it!

The squelch tight condition admitted signals of 0.9µV or stronger.

Recovered audio is quite good from the internal loudspeaker and even better with a half-decent external speaker. However, I found that car ignition noise intruded to some extent, even on medium strength received signals and became quite disturbing on weak signals. We haven't ever developed any standards against which to evaluate this condition,

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so it was just from a gut feeling that it might be a tad on the high side that I mention it here.

The transmitter performs up to our expectations for modern day good quality consumer equipment. Using 13.8Vdc as the standard reference voltage the transmitter produced 4.8 watts of RF power, and using the supplied microphone maximum deviation was as high as 3.8kHz. Other power measurements taken at 12 and 13 volts respectively produced powers of 4.1 and 4.33 watts output.

Transmitter frequency accuracy and drift was well within specified limits.

Scanning

Uniden has retained the user-programmable **Open Scan** and **Group Scan** features found in the now obsolete UH-099 — predecessor to the UH-100 — and added a new feature it calls **SEEK**.

To recap on the basic search functions, the factory default setting for Open Scan (OS — no appearance on the LCD) is a search of all 40 channels when the scan function is selected in the open scan mode. The receiver searches for an occupied channel onto which it will lock and remain while the signal is present, or until it is prompted to *step-on* by the user by a brief press of the MEM function button. The scan function can be cancelled by repressing the SCAN button or by a momentary press of the microphone PTT (Press-To-Talk) button.

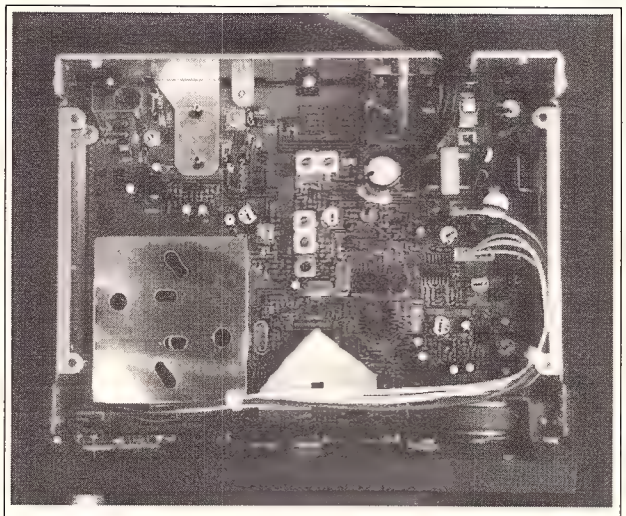
The Group Scan factory default has no channel memories programmed, and a desired group must be programmed by the user. It also has a priority channel function that is so simple to use you could love it to death. The last channel number displayed on the LCD automatically becomes the Priority Channel when Group Scan is activated. For example, if channel 20 was the last channel used before group scan was selected, channel 20 will be the priority channel for the moment. To change the priority channel, simply change the scan starting channel.

Entering scan search channels in either group is just about as simple. In the normal operating mode any channel number will either appear with or without the MEM for memory icon on the LCD. Each channel that appears simultaneously with the MEM icon indicates that it is stored in the appropriate SCAN memory. If there is no MEM icon displayed the channel is *not* in the scan group. To enter or remove a channel from the search group, simply press and hold the MEM button for a couple of seconds and the MEM icon will either light up or extinguish depending on its starting state.

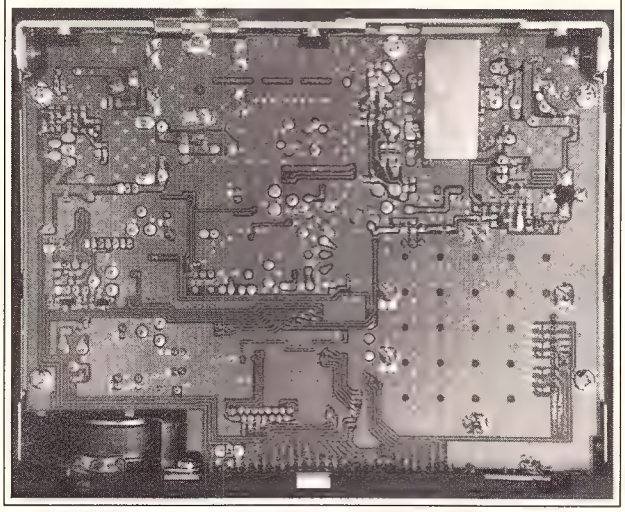
SEEK is a variation on the scan/search theme that allows the user to monitor the scan group selections — either group — without the receiver staying locked up on an occupied channel. In this mode the receiver will hold in a wait state for about four seconds, and if no action is taken to hold that channel it will step on to the next occupied channel where it will wait a further four seconds and so on.

To activate this useful function the receiver must already be in the SCAN mode at which time the SCAN button is pressed and held for about 1.5 seconds when the SCAN icon will begin flashing to signify the SEEK mode has been selected. Simply reverse the procedure to reverse the functions.

All scan/seek activities trigger quickly and accurately even on quite weak signal strength stations.



The UH-100 makes extensive use of the latest surface mount technology. Not only does this make the product easier and less expensive to produce, it makes it more reliable as well.



SELCAL

SELCAL in the UH-100, as in the previous UH-099 model, is fully user-programmable, including provision for setting its own user call number. Other brands have factory-preset ID numbers to avoid duplication of numbers, but Uniden gives the user a free hand in this area.

Group call standards vary to some extent between Australia and Europe, with the local standard using an extended duration (tone period times three) while the main alternate system uses a different tone of the standard duration. The UH-100 caters for both, along with just about every other variable parameter one could need.

Uniden uses a special program mode entry for setting the user ID number so that the code is not likely to be altered by accident.

Uniden includes Group Call codes that are capable of calling thousands of users at one time. However, most operators do not use group call at all.

The UH-100 SELCAL works perfectly and in this model Uniden has corrected the previous mistake of rendering the SELCAL call detection inoperable when the receiver was in the open receive mode.

So, now, if your UH-100 is switched on and is sitting on the appropriate channel and within radio range, the SELCAL function will register a correct call regardless of the operating mode.

A variety of lead-in tones is available to further enhance compatibility with other manufacturers' calling systems.

Summary

Uniden should improve its UHF market share with the introduction of this new UHF CB transceiver. It has rectified its previous model's SELCAL *faux pas* and has added new useful features. The new style compact design box and front-mounted loudspeaker sets the UH-100 as a direct alternative to a competitive top of the line transceiver.

The UH-100 is Uniden's best UHF CRS transceiver yet and has many impressive qualities that will suit a wide range of users. At around $450, or maybe even less, the transceiver represents good value in UHFing.

Radio and Communications thanks **Powerband Communications** for the loan of the review transceiver.

IN FLIGHT INFO

With Bob Bell, VK2UTG,
PO Box 16,
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NSW 2198

A high percentage of airband radio monitors are primarily interested in airline operations, and actively pursue airline aircraft on their scanners, communications receivers, and digital data-decoders.

But many monitors, while they are hugely interested in what's going on aboard the aircraft they are listening to on HF, VHF or UHF, have very little knowledge about such operations. As such, I get a lot of mail asking to explain things that have been heard on the radio, but not understood.

Thinking about the situation, I thought it is high time some sort of useful answers were provided to airline monitoring buffs generally.

So here we go!

Airline flights are planned about one hour before departure. Air Traffic Control gets a full copy of the flight plan. Airlines tend to like their Captains to take off with minimum fuel, as it's more economical. However, the Captains tend to like to have their say in this regard. And the Captain's word is law.

When they do take on fuel, about three per cent of the total fuel load will be spent just carrying the fuel! To carry 30 tonnes of fuel, they will need to use 10 tonnes of it up just to physically carry the other 20 tonnes. And how much fuel is going to be burnt, and how quickly it will be used up, will also depend on the prevailing winds.

Captains chase tailwinds, the winds that push the aircraft along. A headwind is pushing back against the nose, and can wreck an otherwise good groundspeed. And that term, groundspeed, means the speed of the aircraft over a given ground reference point. Air speed is the actual speed the aircraft is flying at through the air. If the indicated airspeed is 380 knots, and there is a damaging headwind of 100 knots, groundspeed will be a sad 280 knots. Get the idea?

You'll often hear airline flight crews on the radio requesting lots of level changes. They will request Flight Level 310, then, 10 minutes later, they will want a climb to Flight level 350, then 15 minutes later the crew will request descent to Flight Level 290. Why? Simple! The winds are too damaging at those other altitudes and they are 'shopping' for the best level to use.

Some airlines use the 'block' system, where they will request all levels between a lower parameter and a higher parameter, at pilot's discretion. These blocks are hard to get, because if other aircraft are using the airways, it becomes unsafe. If, however, there is no other traffic within hundreds of miles, blocks may be approved. In the block, aircraft go and up and down like an elevator until a favourable level is arrived at. They will report to ATC 'in the block, Flight Level 310 to Flight level 350'. That means they have four thousand feet vertically to play with.

Before aircraft depart, a long list of preflight checks are done, including a physical 'walkaround' by the First Officer or the Captain. On board the flight deck, every aircraft system is checked out — the electrics, avionics, hydraulics, pressurisation, autopilot, all flight controls.

These checks are without fail completed from a checklist, so that nothing is missed out. The navigation system is fired up well before the flight if INS or IRS is used, as the gyros and accelerometers need time to spin up and stabilise. If the aircraft is equipped with GNS or GPS, this is not necessary.

Flight Dispatch is responsible for co-ordinating the fuel, boarding passengers and presenting the Captain with the final loadsheet. This is a legal document, and it fully itemises the way the aeroplane has been loaded with fuel, passengers, passenger baggage and freight. The Captain must agree with the Dispatcher's figures on the Loadsheet, and sign it, or the airliner cannot leave the gate.

In the last 20 minutes of the preparation for the flight, after refuelling has been completed, the HF radio with its high-powered 150 watt transmitter will be tested with a ground station, in the case of international overwater flights. They have to wait until fuelling is complete, though, to avoid sparks from the radio igniting the fuel.

A call will also be made on VHF for an 'airways clearance' out of the airport. This will be an encoded but detailed set of flight instructions to get the aircraft out of the terminal airspace safely, so it can start its climb to cruising altitude on its assigned airway. Clearances have to be obtained on the radio for engine start, pushback, and taxi. All this time, radio communications are also under way with the airline company on VHF, and ACARS units are turned on and are frequently used to pass final departure messages, destination weather and so on.

Once taxi clearance is given by ATC, the aircrew will follow a detailed chart of the taxiway and runway layout, so they don't screw up and turn onto the wrong taxiway, and either cause a problem or embarrass themselves. Another series of before takeoff checks are done while the airliner is taxying out to the holding point, including the Captain ensuring that all flightdeck crew are fully aware of and understand the procedure that will be adopted for that particular airport should there be an engine failure or other problem on takeoff.

Speeds are determined, such as Vee1, Vee2, and Vr. Vee1 is the speed up to which the takeoff can be stopped safely. Vee2 is the slowest speed that the aircraft can be flown safely with a failed engine, and Vr is the 'rotation' or lift-off speed. When an aircraft lifts from the runway surface, its nose rises in a sort of an arc, and the takeoff is referred to as a 'rotation' of the nose. The actual command on the flightdeck for takeoff from the Pilot-in-Command is 'Rotate!'

Climbout is done according to the airways clearance obtained earlier, and usually a 'S I D', or 'Standard Instrument Departure' is flown, unless traffic demands that the aircraft be vectored under the radio guidance of the air traffic controller.

During this initial climbout, the crew 'cleans up' the aircraft surfaces, raising the flaps and making the aircraft fully ready for its high speed cruise at maximum cruising altitude. Initially, when the aeroplane is heavy with fuel, it may not be possible to climb to the final desired cruising level. The Captain may plan to cruise at Flight Level 390, which is 39,000 feet, but in the initial stages of the flight, the aircraft may be so heavy that it may not be able to climb above Flight Level 290, or 29,000 feet. Pressurisation on board the aircraft keeps the cabin at the same pressurisation level as would normally be found at between 8,000 feet and 9,000 feet.

Cruise speed in an airliner is referred to as a Mach Number. Normal high speed cruise is about Mach 0.84. Mach is the speed of sound which, at ground level, is about 670 miles per hour, or about 582 knots. *(Just for the record, there's 5280 feet in a statute mile, and 6080 feet in one nautical mile. Travel 1nm in an hour and you've been moving at one knot. One nautical mile represents one minute of latitude (one sixtieth of a degree) at the Equator and, as I recall, there's about 70 miles to a degree at the Equator. Ed.)*

Before I go into a little bit of detail on radio communications, I'll just mention the FDR or Flight Data Recorder. This device effectively records the immediately previous 45 minutes of cockpit and radio audio on board the jet. After 45 minutes of recording time has elapsed, it starts recording over the start again, so there is always the last 45 minutes of cockpit voice able to be accessed. The only exception is where a flight has lasted less time than that, and has then had a problem. There may in that case only be 10 minutes, or 20 minutes of audio on the CDR.

All international airline flights, unless they are charters, delivery flights, or the like, use their airline name plus a series of numbers as their radio callsign.

Domestic flights within Australia utilise the registration letters of the aircraft. For example, a Qantas Boeing 767-ER, registered VH-OGA may be flying a domestic route, Sydney to Adelaide. Radio callsign will be 'Oscar Golf Alpha', the last three letters of the registration. If however, the airliner is flying the morning service to Auckland, it will identify as 'Qantas 43'. Get the idea with callsigns? All letters spoken on the radio will be in the international phonetic alphabet.

Quality of Air Traffic Control varies coun-

try to country. It's debatable, I guess, but even though our controllers are well trained, they don't have much air traffic to play with, when compared to the Americans or Europeans. American controllers tend to diverge from standard phraseology a bit too much, which in instances can itself cause problems. Our controllers in Australia would get their butts kicked long and hard for using terminology and phraseology which is commonplace on USA air traffic control frequencies. So I guess we have to have one of the 'safest' systems here, given the low levels of air traffic, the good training, and the tighter controls on the people managing our airspace.

The last item I will deal with relating to the flight is crewing. On the modern long-range airliners, such as the Boeing 747-400 series jumbos, only two pilots are required to fly the aircraft. But on long-haul sectors, such as Sydney-Los Angeles, *four* pilots are on board. Each crew 'team' of two pilots works for two hours, then rests for two hours. There are even bunks on board, just behind the flight deck.

At the rear of the Boeing 747-400, just near the aft toilets, there is a door leading to a small spiral staircase. At the top of these stairs is a small rest room for the flight attendants and other crew, where they can actually sleep. Once upon a time, sleeping by crews on airline flights was taboo. Now the powers-that-be realise it's the safest way to go, having fully-rested crews performing critical landings or whatever at the end of lengthy 14-hour trips.

If you live near one of the major city international airports in Australia, you will no doubt enjoy monitoring airline traffic both departing from and on approach to your city. So we'll polish off this month with the frequencies for the Towers and Ground Control stations for the nation's international airports for your information, and we'll see you again next year.

Season's greetings to you all!

Where to listen...

Adelaide	TWR	120.5, 281.4
	SMC	121.7
Brisbane	TWR	120.5
	SMC	121.7
Cairns	TWR	124.9
	SMC	121.7
Canberra	TWR	118.7, 243.0
	SMC	121.7
Cocos Island	MTAF	118.1
Darwin	TWR	257.8, 133.1, 243.0
	SMC	264.6, 259.8, 121.7, 119.0
Hobart	TWR	118.1
	MTAF	118.1
Lord Howe Island	FIS	121.6
	CTAF	126.7
Melbourne	TWR	120.5
	SMC	121.7
Norfolk Island	FIS	118.1
	UNIC	118.1
Perth	TWR	120.5
	SMC	121.7
Sydney	TWR	120.5, 124.7
	SMC	126.5, 121.7
Townsville	TWR	257.8, 118.3, 243.0
	SMC	264.6, 121.8

Legend
CTAF = Common Traffic Advisory Frequency
MTAF = Mandatory Traffic Advisory Frequency
SMC = Surface Movement Control
TWR = Tower
UNIC = Unicom

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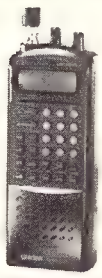

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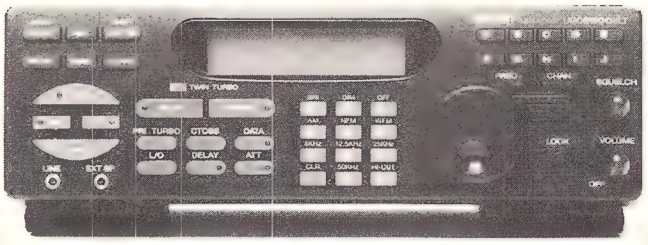

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Have you ever thought all your Christmases had come at once ?
I did, when I picked up my...

OPTOELECTRONICS XPLORER

'NEAR-FIELD' TEST RECEIVER

A review by Michael Evans

They have been talked about in both professional and hobbyist circles for the last 12 months, and at last they are available here. I'm talking, of course, about the new **Xplorer "near-field"** receiver. Optoelectronics commenced advertising them in US communications magazines about six months ago, but they took until late September to reach Australian shores.

The Xplorer is the latest in an impressive list of equipment coming from the people at Optoelectronics in Fort Lauderdale, Florida. The technology in this latest unit combines two of Opto's most popular products, the **Scout 40** frequency recorder and the **R10 FM Interceptor** into one compact little unit.

Big deal you might say, but what can it do for me?

Well, apart from being a very valuable piece of test equipment for the professional radio repair person, it opens up a whole new world of listening pleasure for the radio hobbyist.

The Xplorer allows you to monitor the transmission of any radio signal in the band of 30-2000 MHz in FM mode; displays the frequency that it is currently listening on; and gives you the audio through its inbuilt speaker. As well as that, you get such information as the CTCSS tone being used, the DCS Code, any DTMF information, the deviation and — would you believe — Latitude and Longitude when you hook in a compatible GPS receiver. Pretty impressive from such a small box of tricks.

This is a "near field" receiver; it is *not* a scanner, nor is it a gimmicky toy — it is a piece of professional test equipment which just happens to have some really nice features for the serious hobbyist.

Down to the nuts and bolts of the unit. It measures 139.7mm high by 76.2mm wide by 40.6mm deep. It has an inbuilt NiCd battery that will give around six to eight hours of operating time. The kit comes complete with Opto's heavy duty battery charger, a telescopic antenna, the Xplorer download software on disk, a copy of Scanner Wear SoftControl Version 2.0 in demo form on disk and a special cable to interface the Xplorer with your PC's serial port.

The unit is controlled by the five basic push buttons on the front and by the Push/Turn volume control pot on the top of the unit. Upon power up, the screen displays OPTOELECTRONICS * XPLORER *. This is slightly different to what the manual says. The reason is that the version available in Australia does not need to have the 800 MHz Cellular Band disabled in it as do the ones available in the US.

This really has been a pointless exercise, as the Unlock codes appeared on the Internet within days of the unit's official release, however Optoelectronics *must* release a "cellular locked-out" model to comply with the American FCC regulations.

After power up, and by pressing the F1 key, you can scroll through the different menus: CONFIG, LOCKOUTS, MEMORY, TIME/DATE, COORDINATES, SWEEP and VCO.

In configuration mode, you can turn backlighting on or off, determine how the data interface works (either Icom's CI-V or NMEA-0183 mode), select the data baud rate from 300 to 19.2K, turn the audio/DTMF/auto hold mode/lockouts on or off, select the VFO settings from 5-100kHz in fine mode or 1.5 or 10 MHz in coarse mode as well as setting up the date and time.

If you don't press any of the keys immediately following start-up, the unit will commence sweeping the band from 30-2000 MHz within the first second of the unit being turned on. There is a little block in the top right-hand corner of the screen which moves from left to right to indicate that the band is being swept by the receiver. Once it finds a frequency in use, it locks onto it, displays the frequency, and emits the audio.

If you don't want to listen to what is being received, you can press the SKIP key and the unit will immediately resume scanning.

When the unit homes in on a frequency to which you want to listen, you press the HOLD key and the unit ceases band sweeping and stays on that particular channel. When you are ready to recommence band sweeping, just press the Skip key and away it goes again.

This device is an absolute must for the professional technician.

The ability to monitor the demodulated audio is handy while the ability to see the CTCSS tones or DCS tones being transmitted is a real bonus; the deviation figures make it even more valuable and, additionally, you can also see the DTMF tones being sent.

As little as a year back, this was pretty much a 'pipe dream' and you would require numerous pieces of heavy, bulky and expensive test gear to do all of these things. The arrival of the Xplorer has changed the situation considerably.

Running on the NiCd batteries, and under normal conditions, the unit should run for between four and six hours and the unit can recharge in around one and a half hours using rapid charge.

Forget the trickle charge...

Not so good, however, is the trickle charge mode mentioned in the handbook. I ....☞

XPLORER
REVIEW

put the review unit on charge from 8pm one night and disconnected it the next morning at 7am but, even after 11 hours of trickle charging, the unit went flat in about one hour — a quick rapid charge later and I was back on the air again.

I have used the unit to test radios that we have just programmed and I have used it to test a base station that was misbehaving; I can report that the unit proved to be an invaluable tool in my technician's arsenal.

Radio professionals will find it a good buy at around $1700 — however, although hobbyists will be drooling at the features, most will find the price tag somewhat daunting.

Even so, when you consider the separate cost of the Scout 40 and Interceptor units, the Xplorer price doesn't look all that fierce given that it incorporates the features of both into one neat package.

Unwanted lock up — no problem

During testing, I found that the unit locked up a lot on a couple of garbage frequencies from within the VHF television broadcast band. Not a problem; by pressing SHIFT and SKIP that frequency is then locked out of the scan pattern — no more lock-up.

Once you have locked out unwanted frequencies but would maybe like to check just what you have locked out, you can do this via the LOCKOUTS menu.

Being curious how the unit would perform in a mobile situation, I took it for a scoot around in the car and was impressed with the overall performance.

The recovered audio is of very high quality, and for the very noisy environment (or for somewhat more secretive listening) you can plug in an earphone or headset and listen more discreetly.

With that said, however, I found that the unit tended to become somewhat confused if the vehicle was moving at anything above about 30 km/h. It simply didn't know what to lock onto; this is evidently caused by the signal's multipath fading.

On a walk around the streets of Melbourne, on the other hand, I was privy to a constantly-changing selection of listening, with the unit busily scanning away and locking in on the numerous Police channels, the Gas and Fuel Corporation and Telstra Trunking, just to name a few.

It does, of course, also pick up pager transmitters, and these I quickly locked out as they are a tad annoying to the ears.

For a far more technical approach to what the unit can and cannot receive, the following is a short extract from a file contained on the supplied Xplorer diskette:

"Technically — in brief

First, how does the counter work?

Simply, the counter counts the number of positive zero crossings of its input signal in a specified period.

Thus, if the input signal is a 100 MHz sine wave and the chosen gate period is one second, the counter will count the number of times the input voltage goes from a negative to a positive voltage in one second, and display that as the frequency of the input (cycles per second = Hertz (Hz)).

Getting an accurate frequency count depends on the counter seeing only zero crossings due to a single signal.

If two or more signals are present at the input to the counter, the voltages of the two signals add and the zero crossings are distorted, resulting in erroneous counts.

Exactly how much signal it takes to screw up counting of the desired signal depends on both the relative amplitudes and frequencies of the signals, but a good rule of thumb is that the desired signal should be 10 to 15 dB higher than all others to get a useable count. If more than one interfering signal is present, the situation gets worse quickly.

How does this impact on frequency counting in the field? Transmitter sites with many transmitters operating simultaneously can be seen to be a particularly bad choice for the use of a frequency counter.

The multitude of signals produce a cacophony of zero crossings that the counter cannot separate single signals from. If you are lucky enough to catch the site when only one transmitter is operating, a counter will read correctly, but this will be the exception.

The same conditions apply at cell sites because the control channel as well as numerous individual channel transmitters all operate simultaneously, making successful counting very unlikely.

This scenario can be helped by filters if the transmitters happen to be widely spaced in frequency, but this is not often the case.

Even if a single transmitter is operating, a high-gain vertical antenna may direct very little radiated energy toward the base of the tower.

It seems intuitive that the signal should get stronger as you approach the tower, but in fact you may just be getting further into the null of a very directive antenna.

Don't expect to count anything coming from a 'dish' antenna — they are very directive and probably operating at a very high frequency, well above the capability of your counter.

Cellular phones can be difficult to count since the phone transmitter power output varies over a wide range under command of the cell site. This makes cellphone range testing very ambiguous and generally unrepeatable.

Other pulsed or TDMA (time division multiple access) signals may look like a nice strong signal on the counter's level meter, but because the signal actually is only present part of the time, cannot be correctly counted with a typical counter.

A good example here is a garage door opener transmitter. TV stations are also usually uncountable because of the AM mode present and the presence of the aural transmitter carrier which messes up the zero crossings.

Counting while in a moving vehicle (or counting a moving emitter) can cause problems due to multipath fading. The brief nulls in the signal caused by this fading may be barely perceptible noise burst on a scanner but chop big holes in the short gate period of a counter and render counts inaccurate. Using antennas larger than a half wavelength long can help this situation since the longer antenna will not be completely contained in the spatial null."

Does that answer a few of your technical questions?

The further information contained in the complete file is very handy indeed, and I have included the above snippet so that potential purchasers can look more closely at the unit.

There is nothing worse than buying something and finding that it can't or won't do what you thought it could, should or would do. So let's have a look at a few more features...

With the eight-pin DIN data port that I mentioned earlier you can connect up to your PC with the supplied Xplorer cable and disk and download your data from the unit for sorting or later examination. There are third party pieces of software that are available for the US market to work in conjunction with the Percon FCC Databases, however that is not much use for the Australian market.

Maybe some clever programmer can work on a software package to work in conjunction with the SMA's database. Now there's a challenge! With that in mind, there are some helpful hints for getting the Xplorer to work, depending on your PC's configuration and operating system. Optoelectronics offers the following advice:

The INTERFACE must be set for CI-5 COMMAND from the Xplorer's CONFIG mode. Also, the BAUD RATE and CI-5 ADDRESS settings of the Xplorer must be set up the same as those in XPLORER.EXE program.

This is not something special to the Xplorer software; it also occurs when using modems and communications software on your PC.

The CI-5 standard was one created by Icom many moons ago, and you may recall that the Scout also had an AOR AR-8000 compatible output for automatic 'reaction tuning' of that unit. The Xplorer is not capable of doing this.

For DOS users: on slower computers, data loss during the download may occur at higher data rates. If this occurs, the obvious answer is to try a lower data rate.

Remember to set the data rate of the Xplorer to match that of the PC. If you forget you will get either 'garbage' or nothing at all.

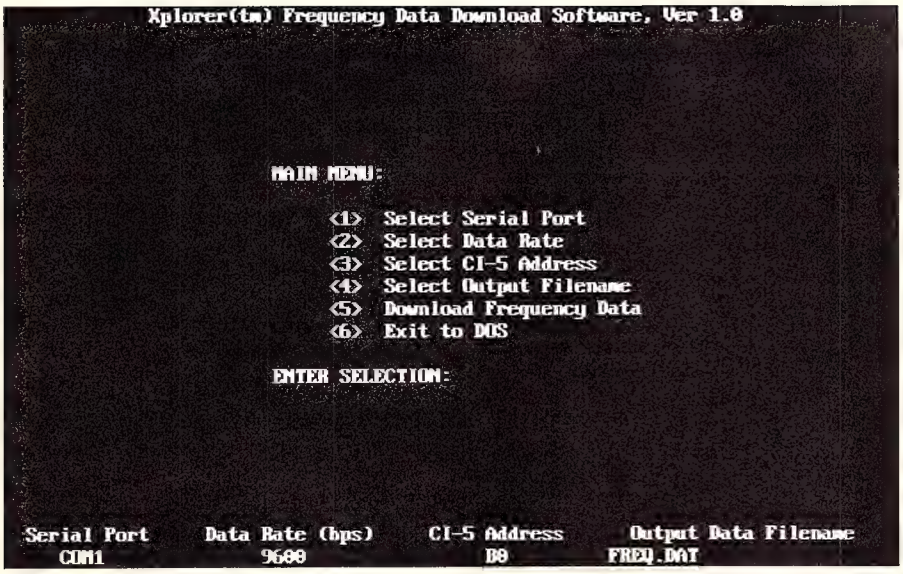
For Windows 3.X users: in general, XPLORER.EXE should run in a DOS window, as long as the selected serial port is not already allocated to another program. If so, unpredictable results may occur.

It is possible that data loss during the download may occur at higher data rates, especially on slower computers. If this occurs, try a lower data rate. Remember to set the data rate of the Xplorer to match that of the PC.

Alternatively, exit Windows, and run XPLORER.EXE from the DOS prompt.

Windows '95 users: As for Windows 3.X

Remember to set the data rate of the Xplorer to match that of the PC. Alternatively, select 'Shut Down' from the 'Start' menu, then



select 'Restart computer in MS-DOS mode', and run XPLORER.EXE from the DOS prompt.

The program itself is very straightforward, and with the above tips in mind you should have no problem configuring the software to talk directly to your Xplorer.

Once you have it set up correctly, you can download your data, in this example to a file called FREQ.DAT and then can manipulate the data with a text editor or import it into your favourite database.

As well as the data output, you also get a TAPE OUTPUT, which is a tape recorder pause control relay.

This is handy if you want to automatically log the audio from the unit onto tape.

It is set up so that you connect your tape recorder's remote pause function onto the Xplorer; when audio is received, the relay contacts close and your tape recorder commences recording; when the audio stops so does the recording.

By utilising this function you can record just the audio without having to waste tape recording dead air time.

Summing it all up

This unit is a valuable piece of test equipment for the radio service professional; it is also of obvious use for surveillance and covert listening.

It is an exciting new piece of technology for the hobbyist which can dramatically expand your listening horizons.

Considering its multitude of features and the amount of technology crammed inside it, the asking price of $1700 is, to my mind, not outrageous and for mine is well worth the money. Top technology doesn't come cheap and this is a top little unit.

Radio and Communications thanks **Daycom Communications** for the supply of the review unit.

Features

- **High-speed FM communications band near-field sweeper;;**
- **Sweeps 30MHz to 2GHz. range in less than one second;**
- **Displays frequency and demodulates audio simultaneously;**
- **Decodes sub-audible signalling tones DCS and CTCSS;**
- **Decodes DTMF at 10 characters per second;**
- **Locks on to two-way FM transmissions up to 0.5km away;**
- **NMEA-0183 GPS interface permits tagging data with location for mapping applications;**
- **CI-V compliant serial data interface with both TTL and RS-232C levels;**
- **Records 500 memory locations with up to 1000 hits per frequency in memory;**
- **Logs frequency, time, date, DCS, CTCSS, DTMF, and latitude and longitude (with GPS receiver attached) into memory;**
- **Real time clock/calendar with battery back-up;**
- **Memory lock-out of up to 100 frequencies;**
- **Automatic or manual hold of frequency;**
- **Frequency skip button;**
- **Tape recorder pause control relay jack;**
- **DTMF encoder for audio tape recording of data;**
- **Rotary encoder for easy selection of menus;**
- **Internal speaker and audio headphone jack;**
- **Miniature 8-pin DIN serial interface connector for PC or GPS;**
- **10-segment signal strength bargraph;**
- **10-segment deviation display with 1-10kHz and 10-100kHz ranges;**
- **Two-line character LCD display with EL backlight;**
- **Includes high-capacity NiCd batteries, power supply, antenna, PC interface cable, download PC software and earphone.**

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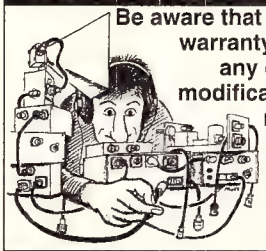
MODIFICATIONS



Be aware that you may void a warranty by performing any of the following modifications. R&C has not tested them and makes no warranty as to their serviceability.

Mods, Fixes and Updates

By Greg Towells, VK2GJT

Yaesu FT-530 expanded receive

This mod will give this radio receive capabilities from 110 to 180 MHz, and 300 to 500 MHz, although will varying degrees of sensitivities across the spectrum. This is how to go about it:

Remove the antenna and power. Remove the four screws on bottom holding battery track. Remove the four (black) screws holding on the rear case. *Slowly* open the front cover from the transceiver and lay both halves on your work bench.

Note the positioning of the white paper insulator in the right half of your radio and lift it out (no, *don't* throw it away!). Carefully locate Jumper Pad 13 and remove the solder from the pad. Re-install the white paper insulator, making sure the ground tab slides through the paper insulator.

Close the radio back up, being careful not to pinch the ribbon cable near the lithium battery when closing the halves. Re-install the four (black) screws holding rear case. Re-install the four (small silver) screws on bottom holding the battery track to radio body.

Attach the antenna and battery. Turn off the radio. Press and hold both arrow keys while turning on the radio.

That is it, the mod is complete.

Icom IC-28 squelch mod

The long, noisy squelch-tail of the Icom IC-28 (A or H model) two metre transceiver can be shortened by replacing C110 (4.7µf) with a smaller value (0.1 to 0.47µf). The best compromise appears to be the installation of a 0.33µf cap.

The capacitor is on the bottom board (the one with the lithium battery), just south-east of IC4 as you face the front of the upside-down radio. The only difficult part is finding the right PC pads to desolder on the back of the board.

You will have to remove the board. Remove the bottom plate, and unplug the speaker. Unplug the coaxial antenna connector, a grey wire. The other connectors may remain in place.

Remove five mounting screws, one in each corner and one near the centre. Tilt the board out of the radio. The button in the upper left corner is the CPU reset. You may have to reprogram the memories if it is pressed.

Remember that, although the radio is off, parts of the circuit are still hot because of the memory-backup battery, so be careful not to short any part of the board during the modification.

Icom IC-2SAT receive mod

This mod will give your radio extended receive capabilities, if they're not already there. There are some fiddly bits involved, but read up and know what you are about to do before commencing the mod.

Take the battery cover off the bottom and remove the two screws. Remove two screws directly behind the PTT button. Remove one screw where the carry strap goes. Gently pull on the front half of the radio and the radio will split apart.

Don't pull *too* far because the front half of the radio is still attached to the back half with that flexible plastic film wiring stuff. Fold the front half to the right and lay it down.

A word of warning here: The battery cover release button can now pop out and a tiny little spring can take off for

Alinco DR-600 extended receive

This mod enables the radio to receive 108 to 142 and 810 to 998 MHz, although naturally sensitivity does vary quite a great deal. Anyhow, this is how to go about it:

Remove the head unit from the radio and open it up. You should find a red wire just looping around near to the front of the unit. Cut this red wire.

To access the AM aircraft band push the VHF button to select that band and then press the VHF button a second time. The radio will display AM next to the frequency readout and tune 108 to 142 MHz.

To access the 800MHz band press the UHF button to select that band and then press the UHF button again to switch between the 70cm band and the 800 MHz band. At this point the 800MHz band will receive but unless you have actually attached a wire to CN-205, will not have an antenna connected to it, so in order to use this band the additional modification below is necessary:

Antenna connection for 800 MHz band

The Alinco DR-600 will receive this band as shipped from the factory after the above modification, however, there is no antenna connected to the input.

On the back of the radio you will notice three holes in the heat sink next to the 70cm antenna lead. You will need to add a third coax lead through this hole and connect it to the 800 MHz input. Remove the covers from the radio and follow the 70cm coax into the radio. The UHF portion of the radio is located on the bottom half of the radio.

Remove the RF shield covering the transmit area by removing the four screws holding the shield to the chassis. You will notice a small coax cable going from the transmit section to the receiver next to the 70cm antenna coax. In the receiver section it plugs into a small connector soldered to the board at a 45° angle.

Along the outside edge you will see another connector of the same type labelled CM50, which is the 800 MHz input. You will need to solder a coax cable from this open connector, route it through the transmitter section and then through the open hole in the heat sink. There is a nice channel cut in the chassis where the coax will lay nicely so it won't get pinched when the RF shield is replaced.

All you will have to do is solder the end of the coax centre conductor and then file it down to fit snugly in the socket. The coax shield is soldered to the connector housing. This is the best option for making the connection unless you can find the proper connector for the socket.

Leave about six inches of coax hanging out the back of the radio and install a BNC connector. Any type of small diameter coax should work — best might be to use a small piece of RG-58. The last step is to reassemble the radio, being careful to not pinch the internal wiring.

You will find the sensitivity between 810 to 889 MHz great, varying between .15 to .35 µV. Although it *will* receive all the way from 810 to 998 MHz, outside the 810 to 889 range the sensitivity is extremely poor.

The aircraft band, 108-142 MHz, is very sensitive across the entire band.

parts unknown. Be warned, there are enough people around to vouch for the frustration involved in looking for the aforementioned departed spring. *(I vouch, dammit, I vouch! Ed.)* Pull the button out of the case *now* and watch out for that blasted little spring!

All work is done on the circuit board inside the *front* half of the radio (the part that you just removed). Onto the work on the innards of the radio.

Look along the right side of the circuit board and about half-way down the right side you will see a tiny circuit board that is mounted *vertically* on it, aligned from top to bottom. Look at the top of this little tiny board and you will see a normal diode (D9) that is vertically mounted on the vertical board. Sounds confusing, but you can't miss it, it's right on the top end of the board.

Cut this diode. Don't try to unsolder it... CUT IT. Trust me, I've been there.

At this stage, another word of warning: don't pull the diode away from the board and leave it hanging. When you put the radio back together it is a very close fit and if you short the diode, the radio won't work at all. The PLL stays unlocked but no damage will occur.

That is all to it. Reassemble the radio, and you will now have extended receive capability after you reset the radio according to the instructions in the manual on the first page. This mod is really worth the effort since the extended range is *very* extended. Many radios will still be locked down around 80 MHz and can receive FM broadcast stations, although they sound pretty bad on narrow FM!

The radio frequency read-out now will go all the way up past 1 GHz, but naturally that's just the dial read-out. Check the Channel Indicator and when it goes to a U for Unlocked you can work out what sort of receive range your radio now has. Of course, the further you stray from the amateur bands, the worse the sensitivity will be, but it's a bonus that the standard rig generally did not have.

Icom IC-900 mods

The following mods enable extended receive frequency range on various modules and bands that they cover. All changes are made in the control head. The diodes in the control head are arranged in a 8x4 array: A-H, 1-4.

In the 430 band module, remove diode D25 (3,D). This will give coverage from 420 to 470 MHz. The VCO in the 430 MHz module covers a 20 MHz range and can be re-adjusted as needed.

For the 144 MHz band module, install diode in (1,C). This will give receive coverage from 138 to 174 MHz.

To enable receive coverage from 40 to 54 MHz in the 50 MHz module, remove diode D32 (4,B).

Finally in the 28 MHz Band, to expand receive coverage from 28 to 40 MHz, remove diode D32 (3,B).

Icom IC-901A tricks

Memory and microprocessor reset: turn power on while holding down check and memory write buttons.

Crossband repeat: turn power on while holding down check and lock buttons. If crossband repeat has been engaged, the 'lock' display will flash. PL (CTCSS) can not be selected in either band for crossband repeat to work. If you need PL to operate the repeater you are linked to, generate it on the radio you are using to talk to the IC-901A. The PL will pass through the IC-901A well enough to access the linked system.

Since the radio is in the locked mode, you can't change frequencies or bands during crossband repeat. To disengage crossband repeat, simply turn off the power or press the lock button.

If there is no audio during crossband repeat, open up the front of the dual-band unit by removing the plastic cover behind where the control head would plug in if the IC-901 is not used in the remote-control head configuration (!) and look for a slide switch mounted on the edge of one of the vertical circuit boards. Simply slide this switch the other way. The switch does not seem to come in any predetermined configuration from Icom, so some radios work fine for crossband repeat right out of the box, and some require the switch to be in the opposite position.

We'll have more for you next time!

Icom IC-24AT undocumented features

The IC-24AT dual-band HT had three additional features that are not described in the owners manual.

These have been left out of the owners manual because some countries restrict the use of the radio in these modes.

AM aircraft receive plus 740 to 960 MHz receive

Remove D13 from the main logic board (this diode may already be removed by Icom in some units). D13 is on the main logic board and is a discrete diode (one of the two in the radio) near the centre of the board. It is the left discrete diode of the two on the board when the radio is open and held with the controls away from you.

Simultaneously hold 'Light', 'B', and '#' keys depressed and turn power on. Ensure that you hold down all these keys until the radio has completed the power up procedure.

It is important to note that the radio will not meet specification on the out-of-band receive frequencies that are enabled with this modification.

Direct keyboard entry of 100 MHz frequency

Simultaneously hold 'Light' and '3' keys depressed and turn power on.

Cross-band repeat (simplex)

Remove D14 from the main logic board (this diode may already be removed by ICOM in some units). The diode is a discrete diode to the right of D13 (from above) and directly beside it. Simultaneously hold 'Funct' depressed and push 'C'.

To enable the cross-band repeat facility, hold down the 'FUNCT' and hit '5' and then push 'D'. To turn off cross-band repeat simultaneously hold 'FUNCT' and 'D' depressed.

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6M 4ele delta loop 3.680 boom $221
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2M 2 5/8 colinear vert $97
23cm 36ele BRASS-con assembled 18dBd .. $175
70 cm 12ele/17ele B/feed ..... $102/$127
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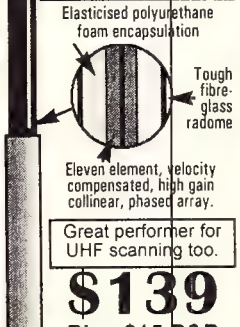
PB-900 is a high gain compound antenna of multiple velocity compensated half wave elements co-phased for optimum performance. The high density fibreglass radome has a gently tapered wall thickness to derive greatest strength and flexibility characteristics while retaining the obvious benefits of low weight. The whole radome is pressure filled with elasticised, high grade polyurethane foam which firmly supports the ten element antenna array in an inert gas atmosphere therefore excluding oxidation and other corrosion from the elements. Foam fill adds considerable strength with minimum mass. PB-900's minimum flex characteristics helps reduce multiple path flutter and fading in windy conditions. The array is DC grounded for receiver static charge protection and minimum precipitation noise. Length 2.7 metres. Mounting sleeve 32mm diameter.

Cross Section Detail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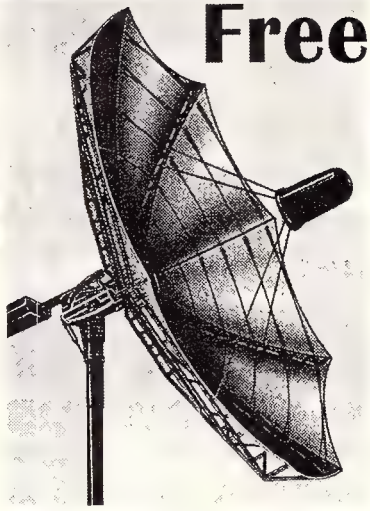

Two Basic Analogue TVRO Systems for Home Use.

Systems outlined here are based on the feature packed Pace MSS-248GR receiver (pictured above) with its dual antenna inputs for KU & C bands, 199 channel memory capacity and its dozens of on screen, user friendly, menu driven functions.

KU Band Requirements

Pace MSS-248GR Satellite Receiver
90cm or 120cm offset feed steel dish
KU band LNB down converter trypical 1dB or less noise figure.
Cable and connectors.

C Band requirements

Pace MSS-248GR Satellite Receiver
1.8 metre Prime Focus Polar dish
C Band combination 26 degree LNB, feed horn & polarator.
Cable and connectors

Handy Accessories.... Satellite Finder signal strength meter takes the stress out of dish alignment. Line Booster Amplifier for long cable runs. Splitter box for second feed to Scanner Receiver. E-PAL decoder to add a second dimension to KU Band viewing. Call for details and brochure.

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Uniden's Popular UH-099 UHF CRS transceiver complete with user programmable SELCAL is being sacrifaced to make way for the NEW MODEL So, here's your chance to pick up a brand new UH-099 with all its great features at a never to be repeated price... This includes full Uniden factory warranty. Stock is definitely limited so be early.

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PB-60 UHF CB SYSTEM ANTENNA

Is a high performance, ground independent, mobile antenna that comes complete with two whip tops, coaxial mounting base, 4 metres of commercial grade RG-58/cu cable, weather cap and connector - nominate connector with order - PL-259 - BNC or TNC. Bigger is not always better and PB-60 offers similar performance to antennas twice its length for only half the price. Overall length with the 6dB whiptop is 93cm and fitted with its companion, super tough, flexible, half wave whip it can safely handle just about any 'bush-bashing' you can hand out. The high gain whip is semi-rigid fibreglass to help suppress mobile flutter and is covered in copper braid and tough, long lasting-polyolefin plasic. Buy the whole package for only. All antenna sections are removeable and available as spare parts

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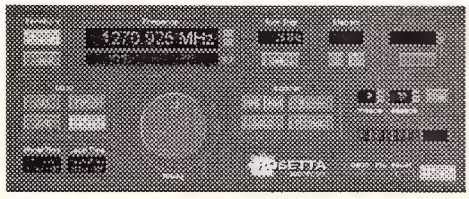

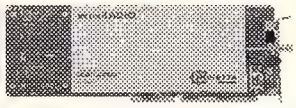

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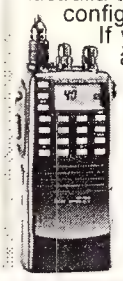

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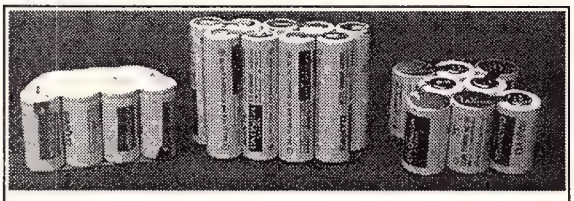

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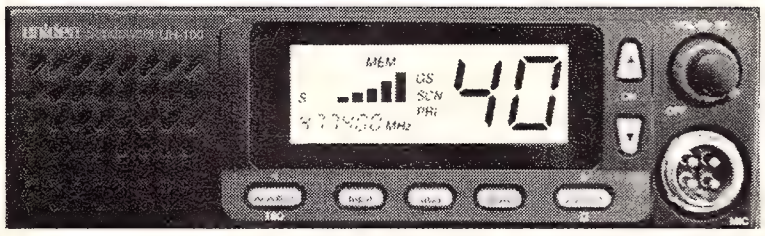
UNIDEN 'Scrambles' UHF with the new... UH-100



Uniden breaks new ground with the introduction of speech scrambling as a standard feature in the brand new UH-100 UHF CB.

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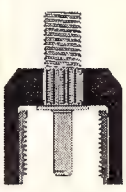
SEE REVIEW THIS ISSUE FOR FULL DETAILS.



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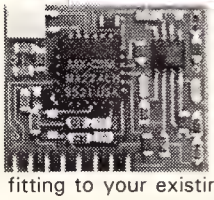

Electrophone's new ASP sub-minature encryption module to suit only the new TX-4200 UHF CRS transceiver is now available for retro fitting to your existing rig or available as a pre delivery option for new sets. The module allows for 32 individual fixed codes on a 5-bit bus and **CAN** be used in conjunction with internal SELCAL.

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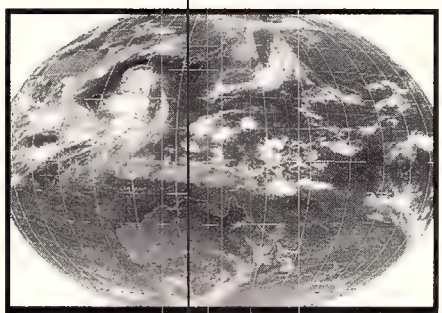

WEFAX SATELLITES

By Arthur Andrews, VK2AAE
30 Araluen Road, Wollar 2850

For the last two years I have been writing these articles, first in the old Amateur Radio Action and then in the Radio & Communications magazine — but now, unfortunately, I have run out of puff and this will be my last article for the time being.

First I would like to thank the more than 350 readers who have written to me over the last 24 months and complimented me on the articles, and I hope that I have encouraged some of them to get into this fascinating hobby. Secondly I would like to thank our editor Len Shaw for his encouragement when I started and also the production editor for the excellent presentation of the graphics which have been reproduced in the magazine. Maybe they'll let me submit articles in the future when something interesting happens in the weather satellite field.

All is quiet on the weather satellite front at the moment with still no news on the launch of NOAA 15, but maybe by the time you read this it will have been launched.

I have been promising for some time to include a couple of satellite antenna designs, and this being the last article it seems as good a time as any. I have tried to make both these types of antennas with limited success due mainly to using what was available around the farm instead of doing the job properly.

The following description is based on an article written by Simon Lewis, GM4PLM published in the British RIG magazine, December 1992.

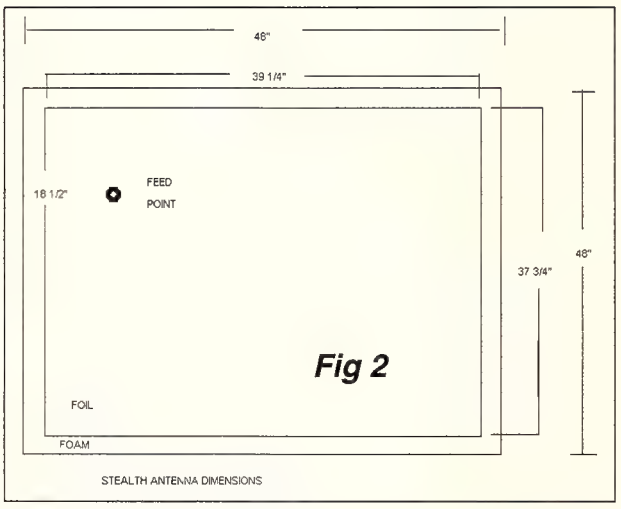

Fig 2

The **Egg Beater** was described as consisting of two full wave loops of narrow gauge wire vertically opposed by 90°. The loops are mounted on a strengthener and a small junction box at the base contains a quarter-wave phasing harness. (See **Fig 1**). The antenna produces a dual radiation pattern covering both low- and high-angle satellite passes.

Construction is simple, requiring only a piece of dowelling, small gauge wire and a plastic box. The diameter of the loops is 74cm which equates to 2.26 M of wire for each loop. Almost any type of narrow gauge wire is said to be suitable as long as it is self-supporting.

A support rod can be made of 18mm dowelling, or the handle of the household broom if you can acquire it without being seen. On the top of the dowelling screw a small 48 x 48 x30 mm plastic box and drill a hole large enough to pass the wire for the loops to pass through. Then mark through these holes onto the dowel and drill into the dowel a few mm to suit the wire diameter.

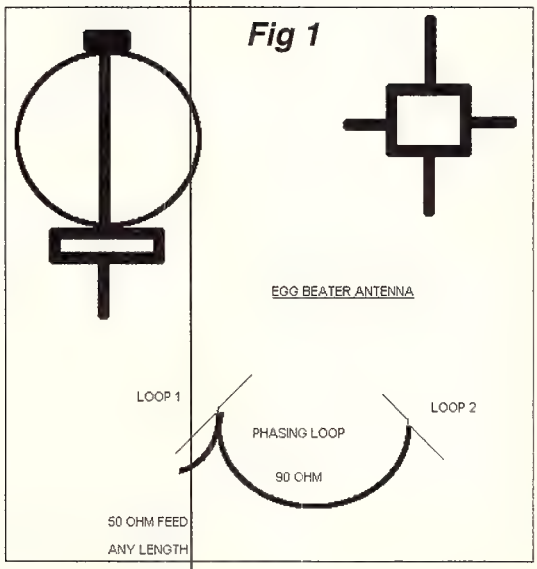

Fig 1

The wire is then passed through the holes in the plastic box and pushed in to the holes in the dowel. The box could then be filled with fibreglass resin or similar for added stability.

In the original design the writer used a larger ABS type box for the phasing harness and a hole was drilled through two sides of the box to suit the size of the dowelling.

At one end mark out four holes equal to each other. Four mounts are then required to hold the bottom of the loops and these can be constructed from 8mm bolts. These can be held in a vice and a small 2 to 3mm holes drilled through them. Another hole in the box is required for a base mount coaxial socket.

The phasing harness was constructed from a quarter-wavelength of 90 ohm coax. The exact length would depend on the velocity factor of the coaxial cable. The formula to calculate the correct length of the loop is Length = Velocity Factor X 1/4 Free Space Wavelength.

Once the phasing loop has been constructed it can be joined with the loop assembly. Slide the phasing harness box up the dowel until it is 74cm from the loop assembly. This fixes the loop size and they are secured with nuts and bolts. The loops can then be squashed or expanded to produce a regular circular shape. Then attach the phasing harness to the loops and coax connector as shown in the diagram and you are ready to go.

When Mike, VK2ASR and I constructed this antenna — which took about 10 minutes — our design was far less sophisticated. Looking around the farm yard we acquired a tomato stake of the required proportions and a length of 100mm flat galvanised strapping strip left over from building the machinery shed.

We formed two loops to the required dimensions and fixed these to the top of the four-sided stake. We then screwed the four ends of the loops to each of the four sides of the stake forming two circular loops. We then constructed the phasing harness (out of 75 ohm coax as we did not have any 90 ohm available; do you?) and attached it to the loops.

We then attached a length of 50 ohm coax and we were ready for a test. Much to our amazement we heard NOAA 14 quite clearly, but not as well as using the turnstile. This is not surprising due to our very Gerry-built construction techniques, and had we fol-

lowed the correct building procedure it would probably have performed much better. Anyway it is a good design to experiment with.

In the June 1994 issue of the British RIG journal there was an article by John Dubois, W1HDX on an APT 'Stealth' antenna. I am not quite sure why he named it 'stealth' other than it is flat and can be mounted on the roof without drawing too much attention. He based his experimental antenna on the 'patch' design.

The main requirement for this antenna is a sheet of foam insulating board with aluminium foil facing on both sides which comes in 4ft X 8ft sizes, 2 inches thick and is used extensively in the American building industry. I do not know whether this type of board is available in Australia, but if it is it would make an interesting project.

John, in his extensive article, goes quite deeply into the theory of the workings of this type of antenna but I will just stick with the construction details.

Measurements are given in the old Imperial form (why oh *why* did we change to Metric?), but no doubt readers will have no trouble in converting the measures to metric. For those who don't want to look it up the conversion rates are as follows: 1 inch ≈ 25.4mm, while 1 foot or 12 inches ≈ 304.8mm.

To start the construction of the stealth antenna cut a 48" X 48" piece from the foam insulation board. On one side of the board mark out a rectangle on the foil 39.25" X 37.75" centred on the board. Using a scalpel or very sharp knife, cut through the foil you have marked out.

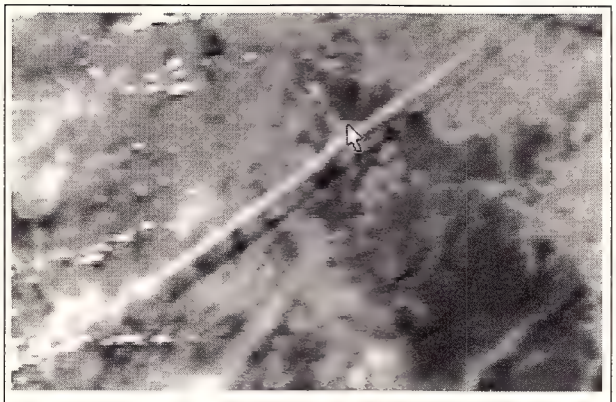

***Fig 3**: A jet leaves a vapour trail over Arthur's farm*

Now strip off the outer strips of foil to leave the rectangle of foil in the middle. With the 39.25" dimension at the top, mark a diagonal line from the top left to the bottom right corners. Then mark a point 18.5" along the diagonal from the top left corner.

Drill a 1/8" hole at this point right through the board and trim the foil edges of the hole clean. (See **Fig 2**).

Take two pieces of copper foil about 1" X 1" with conductive adhesive. Drill a 1/16" hole in the centre of one and a 1/8" hole in the centre of the other. Stick the piece with the 1/8" hole over the drilled hole on the foam board on the reverse side, NOT the side where you have cut the rectangle.

Find a convenient length of RG58 and separate the shield and centre conductor for a distance of 2.25". Strip the centre insulation for 0.25" and tin the centre conductor.

Cut the shield to a length of about 3/8" and fan out flat at a right angle to the cable. Push the centre conductor through the copper foil you have stuck to the rear of the board so that the shield fits flat against the copper foil. Solder the shield to the copper foil. The tinned centre conductor should be sticking out the other side of the board.

Now fit the copper foil piece with the 1/16" hole over the tinned conductor and stick it to the foil on the board. Bend the centre conductor over and solder it to the copper foil.

The front of the antenna is the side with the cut foil square. It can be mounted by nailing, screwing or clamping through the exposed foam sides.

Not having any of the materials described available I did do some experiments using cooking foil, swiped from the kitchen and a scrap bit of foam rubber. However, it was a case of nothing whatever heard...

This month's farewell satellite image (**Fig 3**) was of particular interest to me as I was able to view an object in the sky from both the top and the bottom at the same time. As I walked to the shack to capture the afternoon NOAA I noticed an airliner on the regular Melbourne to Brisbane flight path approaching my location spewing out a large condensation trail. I wondered if the satellite would also pick it up. It sure did, and was exciting to see the satellite's view of what I could see from the ground. The mouse arrow points to my location in a valley next to the mountains and note the shadow cast on the earth by the condensation trail. Certainly a rare picture.

Well, that's all, folks, and thanks again for your many letters; they were very much appreciated. Hopefully I will be able to write another article in a few months' time.

Cheers for now and all the best for Christmas and the New Year.

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Three way shoot-out — the clash of the DSP Titans

Icom IC-775DSP vs Kenwood TS-870S vs Yaesu FT-1000MP

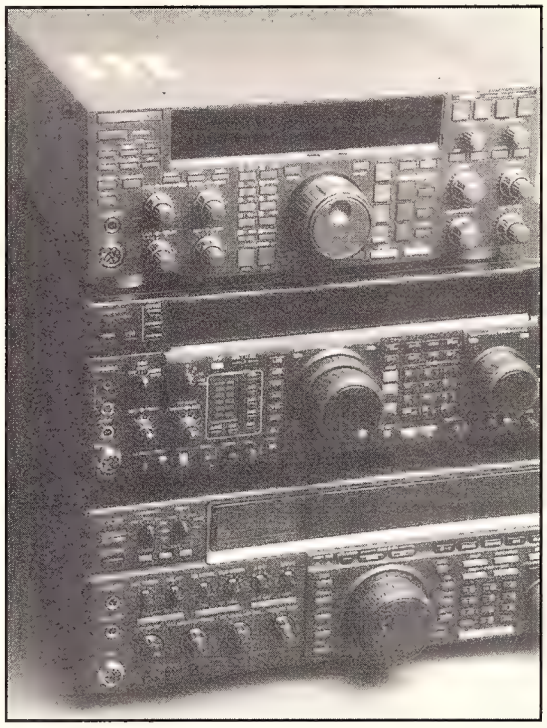
Introduced and compiled by Chris Edmondson, VK3CE

Which is the best big radio of them all? It's something we've been pretty keen to know for quite a while. For several years, the answer has been automatic, simple, and quite incontrovertible: the Icom IC-781, costing well over $10,000, has been head and shoulders above the rest. A magnificent achievement for its day, the IC-781 simply towered over everything else on the market.

But it has been a few years, and we've been looking at some pretty impressive gear over the last year or so. Now that all of the major players have DSP-equipped flagships, we figured it was high time to pit one against the other in a real 'bang for the bucks' shoot-out.

I couldn't fairly write this review on my own. For one thing, likes and dislikes are such *personal* things that your opinion may well significantly vary from mine. So it was time to dive for the history book, to repeat an exercise I conducted several years ago as Editor of **Amateur Radio Action** magazine. We approached several existing and potential reviewers and asked each to examine a number of top-shelf amateur transceivers, in their own shacks, side by side.

Not one of our testers is identified in the article. A couple of the reviewers write in this magazine, but one of them actually writes elsewhere. All, however, are very well qualified for the task. All are full-call amateurs of many years standing, and all of them share a passion for HF.



This is easily the most in-depth and exhaustive review this magazine or its forebears has ever conducted. The brief was simple. We delivered four transceivers to each reviewer, gave as few instructions as we could get away with, and left the gear with the people for around a week or so. Four? Yep — we added the King to the heap. We kept whispering in reverent tones about our benchmark of several years standing, the IC-781, so that radio went along for the ride.

We should thank the suppliers of the review equipment at the outset. After all, each of these transceivers costs a bundle, and here we were carting and freighting them all over the place for a number of weeks. In fact, the review Icom was a most unusual case. It was very generously supplied by a private owner, as Icom had sold out and was waiting for further stocks to arrive. So thanks very much for *your* help, Mr X. We appreciate your trust and generosity. And now...

A brief overview...

We have reviewed each of these radios, so we'll keep this bit brief.

The three transceivers examined here are the top DSP-equipped radios from the Big Three. With the exception of the Kenwood, these radios represent the top models sold in this country, as Icom's 150 watt IC-781 is fast disappearing into history and the $6000-odd Yaesu FT-1000, all 200 watts of it, is no longer imported into Australia. The DSP-equipped $7200 Kenwood TS-950SDX *is* still current and *is* officially still available, or so we were told. However, it wasn't possible to find one in time for this exercise so we included the newer, cheaper TS-870S, even though the TS-950DSX is the logical competitor to the similarly-priced IC-775DSP.

You may wonder why we'd compare three radios with such widely disparate price tags. This is simply explained by the need to have built-in DSP, and we wanted to look at the most current radios available. You'll note the sidebar overleaf, though — we couldn't resist the temptation to take one quick parting look at the dear old IC-781.

So our first contender — keeping it strictly alphabetical, as always — is the **Icom IC-775DSP**. At a RRP of $7850, this magnificent transceiver is easily the most expensive of the three examined here. I dare say you'd find the 'street price' of this radio more like $7000, though. I doubt the dealer would let you escape with any cash in your pocket if you'd headed through the door with seven grand hanging out of it!

The large Icom IC-775DSP featured in the first edition of this magazine, in July last year. It hasn't aged a day since then, I can tell you.

Next on our shopping list is the *least* expensive of these radios. The **Kenwood TS-870S** represents good buying at bang on half the street price of the IC-775DSP. Although the official RRP was set at $4476.30 at the time of its initial release, you can buy one of these radios for more like a cool $3500 today, but it doesn't have the built-in power supply of the Icom, nor its 200 watt output whack. The street price moves to $3890 with a stand-alone Kenwood power supply included. The fairly significant reduction in price happened at about the time the Yaesu FT-1000MP was released. (In fact, it costs an awesome $10,000 less than the Icom IC-781!) We reviewed the TS-870S in February this year...

The final combatant here is the **Yaesu FT-1000MP**. It arrives mid-way in price between the other two, yet boasts more user-accessible features than either of them, and several unique offerings not found on any other radio. Like the Kenwood, it's a 100 watt radio. It's the most recent arrival on the market of the three, and we tested it in the July issue this year.

All three have built-in automatic antenna tuners, but only two follow the 'two receivers' approach. Both the Icom and Yaesu have two tuning knobs, and both can monitor two frequencies at the one time, with the simple proviso that the two spots should be fairly close to one another, as there's a single front-end section being used for both. Missing out on this facility (and the built-in supply) means the Kenwood is physically quite a bit smaller than the other two.

Those of you with long memories will recall our test in ARA of the **TenTec Omni-6**. This US-built radio was actually the first commercially-made amateur transceiver to offer built-in DSP, but it has sold here in such small numbers that it really couldn't be considered a mainstream model.

Those people who have TenTec gear, though, swear by it...

Finally, a word about our reviewers. All of them male, one of the reviewers owns a top-shelf Icom. He knew what to expect. Another has a somewhat more modest rig, a mid-spec Kenwood mobile, and as a result was simply blown away by all of the receiver sections in particular. ("Dammit, they're *alive*!") Another is a Kenwood man of many years standing. He runs a TS-940S (amongst others in a nice collection) and is noted for having a truly magnificent signal. Our final reviewer may have put two bob each way, as he has an IC-781 and a Yaesu FT-1000 as well!

Okay, let's get started.

Icom IC-775DSP

All of the reviewers commented on several things when first facing the IC-775DSP. Firstly, the imposing size and sensible, clear layout of the radio. The second thing that stands out is the clarity of the display. Here's how Reviewer Two saw it:

"On applying power, the display literally springs to life, a very clear yellow/orange with good size numbers which are very easy to read. Of the three rigs reviewed, this display would be have to be the best by far — striking, pleasant to use and distinctive."

Reviewer One has a thing about crook tuning knobs. Nothing to complain about here! Until this radio came along, we thought the IC-765 had the best and nicest tuning of the lot. The IC-775DSP's is even better. It's huge, heavy and free-spinning. Digital mode lovers will particularly like the variable tuning rate of down to 500Hz per dial revolution and 1Hz display.

The other standout features, for him, were the:

- amazing quality of the transmit and receive audio;
- super-fast antenna tuner;
- smoothness and extraordinary quality of all of the rig's facilities; and
- exceptionally sensitive and quiet receiver.

Reviewer One continues: "On top of that, I have to tell you that I found the IC-775DSP presented the best transmit and receive audio of any rig I have yet used, with the possible exception of some very old valve 'phasing' rigs, a design which never makes an appearance these days. It is simply amazing how nice the IC-775DSP sounds on air, especially with the speech processor on and with the optional SM-20 desk microphone plugged in. In this respect, I do not know of any modern HF transceiver that comes anywhere near the IC-775DSP.

"The IC-775DSP has a wonderful, fully-optioned receiver too. On CW it is really quite excellent, especially with its twin passband tuning facilities used properly. With this pair of knobs, adjacent channel interference simply does not stand a chance. In the other modes these are equally effective and, along with this, the ease of tuning, the exceptionally quiet receiver and the immense quality of the front end almost take your breath away when making comparisons.

"Another winning feature of the IC-775DSP is the fact that it runs 200 watts. In many ways, this is the one feature which may *not* please some people. Unless you wind it back, the 200 watts will blow the foofer valve out of any amateur radio linear amplifier I know of. The point is, though, you really do not need a linear amplifier with the IC-775DSP. 200 watts of RF of this calibre has real ....☞

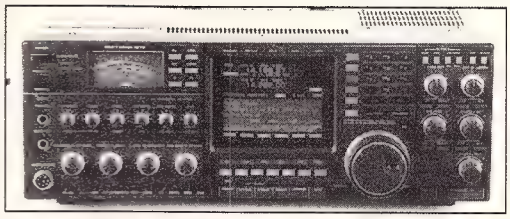
The King is Dead, Long Live the Kings!

The IC-781 gets knocked from its perch...

It had to happen eventually. We all knew that. It's not far shy of ten years since Icom launched the ambitious IC-781 on an incredulous amateur populace... and after all those years it's finally been knocked from its secure perch as the Best of the Best by not one but two radios — its little brother, the IC-775DSP, and the gadget-lover's paradise, the Yaesu FT-1000MP.

There's an elite little club, numbering amongst its members such dual-receiver radios as Icom's own IC-781, Kenwood's TS-950SDX and the original mighty 200 watt Yaesu FT-1000. These three top non-DSP radios of a few years ago stood head and shoulders above the crowd, not only in stature, but in the remarkable quality of their transmitted audio and the dynamic range and quality of their receiver chains. We'd always seen the IC-781 as the overall best of this bunch — and well it might be, with a towering price tag big enough to match its towering performance.

But the IC-775DSP and FT-1000MP are at least the equal of this crowd in every respect, and superior to all of them in many other regards. The new Icom may not have all the bells and whistles, and it certainly doesn't look anything like as impressive as the IC-781, and the Yaesu is 50 watts short in output compared to the IC-781, but they are clear winners in the performance stakes.



We were fascinated to read some of the overseas reviews of these juggernauts of amateur radio. Two particular reviews come to mind. One, in a recent issue of CQ, examined the FT-1000MP very closely. The well-regarded reviewer summarised his very comprehensive review along these lines: "I've reviewed more than 100 HF radios in my time, and this is the first time I can't find anything at all to criticise."

And RadCom, that august member journal of the RSGB, recently compared the IC-775DSP with the Yaesu FT-1000MP. In a fiercely-fought joust, RadCom proclaimed the FT-1000MP to be the best radio on earth, and clearly a better buy than the Icom.

Where the IC-781 ran 150 watts, the IC-775DSP runs 200, although the much less expensive FT-1000MP makes do with a 'mere' 100. Where the IC-781's receiver was bloody hot, the IC-775DSP's and FT-1000MP's are absolutely scalding. Where the IC-781 was incredibly good at just about everything, the IC-775DSP and FT-1000MP are at least as good or somehow even better.

You can blame quite a lot of it on the DSP which, while almost invisible to the user, is good enough to get rid of interference almost as though there's a little man inside the boxes scything a dirty great samurai sword around while twiddling knobs and dials for you. The radios seems to know all by themselves what you really want to listen to, then quietly and without fuss eliminate everything else. They're quite uncanny in that regard.

It was the good old side-by-side (one on top of the other, actually) test with the coax switch which finally settled the matter. The received signals were pretty much the same with the DSP out, or when tuning a quiet band, but add some QRM — the more the merrier — and perhaps a little QRN to the equation and the balance swung firmly to the IC-775DSP and the FT-1000MP. The DSP really does transform the performance.

When you consider that the IC-775DSP really replaces the IC-765, not the IC-781... well, we couldn't resist the temptation and the dear old IC-765 joined in the fun. The operating table was really groaning under the combined mass of four super heavyweights, but the result was always the same: the nicely-integrated DSP swung the balance in favour of the newcomers.

The result in every test was almost always that the big DSP rigs were better than the IC-781 to some degree, while that radio outperformed the IC-765 to some degree.

The crystal-clear transmitted audio on the new Icom radio sounds twice as good as its little brother, and is clearly slightly better than the Yaesu, which is slightly better than the IC-781! The difference in receiver performance is also clear. I'm not trying to say that the IC-765 has a poor receiver. It has a very good receiver indeed — just compare it to any 'ordinary' radio — but the new radios' receivers are audibly better.

All of these radios are really quite magnificent pieces of gear, any way you look at them. Of course, you could always add an after-market DSP machine to the IC-781... By golly, now that would be an interesting proposition!

In fact, IC-781 owners sholdn't despair — their radios are not worthless, they've just fallen a little behind. The classic IC-781 is by no means relegated to the back room and I doubt that you would achieve much (except a depleted bank balance) were you to try and change over for one of these newer radios.

Sadly the IC-781 just can't quite compete head-on with the newer, quieter DDS synthesisers, better mixers and DSP technology. But at current second-hand prices the IC-781 is still one of the better buys around.

One thing that none of these newer radios can hope to match is the array of features included in the IC-781. Its spectrum scope is unique, its huge CRT display unrivalled and its memory management system, along with such niceties as the ability to display RTTY and such, on the screen make this a formidable contender.

Of course, nobody offers anything quite like it at the moment — or do they? Keep your eyes open for the ultra-new Icom IC-756 HF plus 6M base transceiver released in Japan in August at the JAIA convetion. With an LCD display as big as the IC-781's CRT, spectrum scope, DSP and six metres, this may be the next radio we need to add to our benchmark! You'll find a picture of the new beastie on page 40 of this issue.

The King, the IC-781, has finally lost its place on the throne. Long live the kings!

Clash of the Titans

IC-775DSP vs TS-870S vs FT-1000MP

continued...

clout, even on 'dead bands'. In fact, I guess you could subtract the price of a linear amplifier from the cost of the IC-775DSP if you are being 'dollar conscious' in your comparisons. (The legal limit is only 3dB away...)

"The list of extras on the IC-775DSP goes on for quite a way. The fast, temporary memories, antenna switch, special DSP facilities, instant, automatic heterodyne notch and the myriad of tricks you can pull with the second receiver are quite substantial."

Over to **Reviewer Two**: "On the receive side, the rig was very easy to get going, with intuitive frequency and mode entry. Initially, the profound silences between stations when tuning along the broadcast band were disconcerting, as the DSP circuitry removed much of the hash. The selectivity is outstanding, as each station appears, then disappears to be replaced seamlessly by the next. And there were always plenty of stations to hear — the sensitivity is extremely good, too.

"Dual VFOs are handy but the recommendation is that the two frequencies monitored are in the same band as the front end will be set for the main VFO. This is all right for the DXer who wants to monitor the call frequency while handling a QSO further up the band. Keeping an eye on a short-wave broadcaster transmitting on two bands would not be so effective, however, although this rig is not specifically a broadcast receiver.

"This is without doubt an outstanding rig, most notably on the receive side, where its selectivity and sensitivity open up new horizons in shortwave listening.

"The unit has its own built-in power supply, which makes for very tidy cabling in the form of a standard IEC power lead. The added bulk and weight are not really a problem, since the thing is so large already that it is unlikely to be moved once it is given pride of place in the shack (it took some moving to get it out of *my* shack but partly that's because I wanted to keep it!).

"Thankfully, both Icom and Yaesu use standard DIN sockets for accessory connections 'round the back. They are easy to get hold of and easy to solder. Feet are fitted to raise the front but not enough for my liking. I would hate to spoil the look of an expensive rig by propping it up on books...

Now to **Reviewer Three**: "By any standard this is a *big* radio! It is large, it is heavy and it looks like a serious transceiver. Of course, the price is large to go with it. The IC-775DSP has been around for over 12 months now and is the longest-established of the three radios we are comparing.

Failings:

1. Price — the $7000 tag places the IC-775DSP in a price bracket above the other radios.

Good points:

1. Large, clear, easy to read LCD display with 1Hz tuning resolution.
2. Well-grouped front panel controls.
3. Lots of output power from the MOS-FET PA and a gutsy tuner.
4. An analogue meter (thanks Icom!) rather than the electronic meter used on the others.
5. Easy-to-use DSP functions."

Reviewer Four really liked the Icom. "After getting over the shock of the overall weight of this radio (presumably due in part to the larger power supply needed to run all that power), I initially thought it looked a bit plain, particularly when compared to the glitzy Yaesu.

"But appearances can be deceiving. I reckon the Icom's greatest strength lies in its wonderful simplicity of operation. An example: on the Yaesu, to fire up the DSP, you push a button then turn a knob or two to select the appropriate envelope. With the Icom, you push one little button and that's it — but see if you can *find* the damned thing in a hurry!

"The IC-775DSP is a revelation. Where it stands out in particular is the receiver. It is, quite simply, amazing. The largest of signals don't raise a sweat, but it's the way it hears the *smallest* of signals which makes you sit up and take note. Tuning around, you find signals that you'd tune right past on other, mere mortal receivers. If you haven't encountered a radio like this before, the receiver is the first thing you'll notice. It's really quite remarkable. And it is silent between stations...

"I suppose it should go without saying in a rig of this calibre that the transmitted audio is good. How good? It sparkles. People kept calling me just to ask what radio I was running. They'd tuned in briefly to find who was yakking, then stopped there, intrigued, just to find out more. Icom always tries to get a good balance between audio timbre and bright communications punch. With the IC-775DSP it has truly excelled.

"You can sum up the Icom IC-775DSP's performance in just two words: truly shattering."

Kenwood TS-870S

In moving from a physically large radio like the very memorable Icom to the Kenwood TS-870S, you're likely to experience a few "it can't possibly compete" feelings. But remember, we're shifting from a $7000 rig to a $3500 rig.

The TS-870S is ideally set up for devotees of Mr Morse's Code. The keyer, the memory system, full break-in, precise frequency and sideband setting capability and razor-sharp filtering are ideal for use with that mode.

The variable receive bandwidth impressed all the testers, with each of them bringing that feature up in conversation. Let's ask the team what it thinks...

Over to **Reviewer One**:

"Before even switching the TS-870S on, I had made certain assumptions about what I would find. First, I would assume that the transmit audio quality would be superb — Kenwood has a reputation to uphold and quality audio is what I would expect once again. Second, there should be a myriad of functions and facilities tucked away. Third, I would expect that there would be a great deal of flexibility to be available in the memory / VFO section department.

"Well, all three expectations were met to some degree and so I was in no way disappointed. The TS-870S has DSP in both transmit and receive modes and a very fast automatic antenna tuner, but it has only one receiver and requires an external source of 12 volts to get up and running. This puts the TS-870S well behind its competitors in this review in terms of available facilities. What was a little disappointing, however, was the lower than expected 'oomph' of the transmitted signal. On air, the TS-870S consistently received a far weaker signal report than the other review rigs.

"To be positive, high on the list of things I liked were the super-fast and efficient automatic heterodyne notch filters (annoyingly, there are *two* — one at IF level and one at audio level), the beautifully smooth tuning and the compact size of the unit. The snappy automatic antenna tuner and the superb display of the current bandwidth settings of the DSP unit rate highly too.

"Some of the things I did not like were the somewhat cluttered ergonomics, the 12 volts power requirement, and the fact that a 'lower and upper' filtering arrangement was provided rather than a movable left and right wall filter adjustment from the DSP set the other rigs had. The TS-870S' bandwidth arrangement is okay but not intuitively as effective as the others.

"To my ears, the receiver in the TS-870S was highly sensitive but it left me with the impression that all the bands are noisy and even harsh to listen to. Perhaps some will like this constant 'hissing and alive' effect, in that it implies sensitivity and real life in the receiver. I found it all a little tiring.

"DSP is a mixed blessing on some rigs. On receive, the TS-870S makes outstanding use of the facility and it really separates this excellent rig from other run-of-the-mill sets. The IF notch and DSP bandpass shaping characteristics are excellent. On transmit, though, I reckon it is a dead loss. Pushing the button marked TX EQ invokes a reworking of the transmitter audio which, to the ears of others, consistently degraded the signal."

Over to **Reviewer Two**: "The display is *very* dim. My much older HF rig, with its conventional meter and white-on-black display, is far easier to read than the TS-870. Getting on a level with the display helps ....☞

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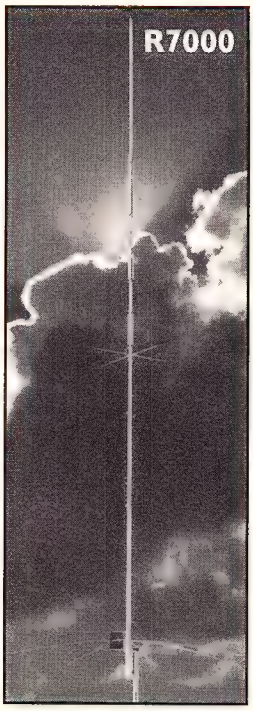

ICOM

- IC-R8500 next generation receiver
- IC-775 DSP
- IC-X2A
- IC-40 GX UHF CB transceiver

IC-T7A

IC-706

IC-2710H

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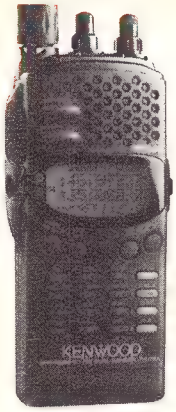
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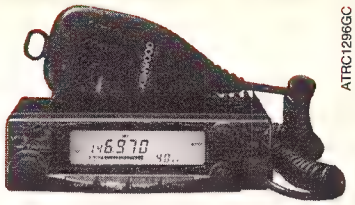
TS-50S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Clash of the Titans

IC-775DSP vs TS-870S vs FT-1000MP

continued...

its readability, but this is not easy since the TS-870's feet do not provide for lifting the front off the desktop, a feature I particularly look for.

"Once I got the Kenwood TS-870 going, I found myself consistently grabbing the wrong control when looking for the volume control. Why is it not at the bottom left where it would be most readily found? On a modern rig with so many controls, the placement of the volume control (sorry, audio gain control) should the first decision made.

"The DSP side of things was very effective. The 'beat cancel' function was good at removing annoying whines but never totally got rid of the unwanted noises. The audio in general always seemed to have a digitised quality to it — the warmth or richness of a good audio signal was missing.

"Noise reduction was outstanding. As it was switched in, the noise fell steadily away over a second or two as the DSP circuitry analysed what was there and threw away the rubbish. The resulting audio was typically DSP — very hollow and thin — but at least it was clear. The main problem here was that the NR was either ON or OFF. But sometimes, ON was too much and OFF was not enough...

"The Kenwood TS-870 requires an external power supply, which is something to take into account when shelling out the readies, since a power supply with enough guts is not cheap. But if you have the power available, that's a real saving. I have a preference for everything being in the same box but other people will no doubt think differently.

"Kenwood still insists on using a 13-pin proprietary socket for accessories such as a packet modem. Have they ever tried to solder one of these devils? Of course, they are not carried by the regular electronics suppliers so it means a trip to the Kenwood supplier whenever one is needed. Small point but annoying...

Over to **Reviewer Three**:

"This radio has been on the market here for some months now, and a few people have had the chance to give them some hard punishment. In the best tradition of Kenwood HF bases stations the TS-870S suffers from the lack of an internal power supply, but it seems that Kenwood has a philosophical objection to such niceties and so there appears to be little we can do about it!

"Failings:

1. Difficult to manage front panel layout for right-handed users wishing to enter frequencies directly. I am left-handed, but the layout of the keypad and the awkward band changing arrangement still didn't impress me.
2. Another 'synthetic' meter which, although not quite as blatantly a bar graph, still leaves me absolutely cold.
3. Several users complained of 'un-Kenwood-like' transmit audio. Having tried several radios and listened to others I am convinced that the TS-870S does not have the traditional audio quality for which this maker has been renowned.
4. Vacuum fluorescent display lacks clarity of design and contrasting annunciators. Often confusing to read.

"Good points:

1. Variable AGC (like the IC-775DSP) unlike the switchable AGC of the FT-1000MP was very smooth and useful under poor band conditions.
2. Software control was very nice and very fast, but sadly the software isn't supplied with the radio here as it is overseas. Perhaps if you ask your dealer nicely he could get it from Kenwood for you."

Now for **Reviewer Four**:

"The Kenwood TS-870S is the least expensive of this lot and, frankly, it shows in a number of key areas. That's not to say this radio is not as good as the others at all — it *is* a good transceiver, but I feel that a base station radio should at least have the power supply built in.

"But really, Kenwood, why is the volume control in such a silly place? Why are the ergonomics so screwed up and confusing? You get used to anything given enough time, but Kenwood has really moved in a completely different direction to everyone else here. I suppose I should own up that I didn't ever really feel comfortable with the TS-870S, even though it acquitted itself quite well on the air.

"While the receiver, when correctly adjusted, showed the bright and crisp hallmark of DSP, all signal reports on transmit were disappointing. Until, that is, I turned the DSP off, and the reports were much better.

"In other areas, things were not too shabby at all. Overall, then, this is quite a nice radio. It's clearly a class down from the Icom and Yaesu, but so is its price tag."

Yaesu FT-1000MP

The most recent arrival of the three transceivers considered in this comparison, the Yaesu FT-1000MP has received much acclaim from the amateur press around the world. Let's see what our reviewers said:

Reviewer One:

"The FT-1000MP is a truly complete rig with scarcely a feature of any kind missing. For me the most special features (listed downwards from the most spectacular) are the razor sharp filter walls for the receiver brought about by the Collins mechanical filter, the almost unbelievable quality of the receiver audio, the lightning-fast antenna tuner, the twin bandpass system and the extraordinary CW system. The myriad of other features — including the second receiver and the excellent DSP — are very good as well.

"The 'shuttle-jog system' for rapidly tuning across sections of the bands is simply brilliant. Despite that, I only sometimes used it, but it is something you instantly miss as soon as you look at any other rig.

"The implementation of aspects of DSP technology is similarly amazing but is only fully used on rare occasions. The use of DSP on transmit on any of the rigs I tested made a complete mess of the transmit audio quality so I didn't bother with it. On receive, the EDSP worked as well on the FT-1000MP as it did on the other rigs. The Icom probably gave the most special DSP enhancements on receive closely followed by this one.

"The second receiver works very well indeed (you must be on the same band as the main receiver), the audio filtering, moveable filter walls, DSP enhancements and automatic heterodyne notches are all wonderful, should you need them. The frequency selection system is extremely well designed and agile.

"In short, the facilities presented in the whole transceiver are second to none. For CW, the FT-1000MP provides the whole lot. The contest keyer with automatic numbering system really won me over. But there is more — have you tried synchronous AM detection before? The audio from the FT-1000MP's receiver is special enough without this. Switch in this mode and you just about get hi-fi!

"In every possible respect, the FT-1000MP is a dream to use on the air. The incredibly nice-sounding receiver and the full range of QRM combating facilities make this receiver better even than that in the Icom IC-781 and about on a par with the Icom IC-775DSP."

Reviewer Two couldn't have been more diametrically opposed. Here's what he said:

"Once again we have quite a large black box. The display on adding power came up with clearly visible white and orange lettering, quite useable as long as the direct light is not too strong. More cryptic lettering attempted to explain the functions of some of the controls — IPO for bypassing the preamplifier on strong signals, QMB for the Quick Memory Bank and so on.

"There are plenty of ways to tune the Yaesu FT-1000, including a good size main tuning knob which includes a shuttle control. This works rather like the similar control on a video cassette recorder, except that it shuttles through the frequencies at quite high speed — great for getting to where you want to be quickly.

"A 'channelised' control is provided as well, so that a scan of any band can be undertaken at the right frequency spacing. The conventional keypad provides for direct entry of any frequency. The only problem here seemed to be getting back to general coverage but perhaps I was missing some other function in the excitement.

"EDSP (Enhanced Digital Signal Processing) is Yaesu's acronym for the

Kenwood TS-870S

process of cleaning up the crud digitally. The contour can be adjusted to optimise a particular signal but this takes quite a bit of practice to accomplish. The characteristic DSP sound which results may not be to the liking of some but at least the rubbish has gone from the signal. In general the received audio was good, with an upper-mounted speaker doing the job well.

"The display changes before your very eyes as you change modes. CW, for example, has a very effective tuning indicator while RTTY has its own, which is equally effective.

"A few gripes. I had a few problems operating the Contour/Noise Reduction controls without knocking nearby knobs. Accidentally pressing USER sent the whole rig off to some unknown user's preference and it took a bit of fiddling to get it back.

"In practice, *I* would be the user, so the preference would be mine! The UP/DOWN buttons changed the 100 kHz digit, while FAST changed this to the MHz digit... quite confusing at first. Entering a new frequency via the keypad was unnecessarily messy. I prefer a quick tune option, eg going straight to the 14s or 21s.

"An initial on-air QSO brought comments that some syllables were imprecise. Exploring a little further, the cause seemed to be over-driving, which was quickly corrected by reducing the microphone gain to bring the ALC within the red band. From then on, comments were that the audio was everything you would expect it to be — clear and strong."

Now for **Reviewer Three**: "I chose to look at the Yaesu first, for the simple reason that it is the newest of these radios to be released in this country, despite being available overseas for some time. To summarise, I found some failings in the FT1000MP design, and some nice points:
"Failings:
1. Bar-graphs have been substituted for the conventional panel meter of the earlier model, making it not as easy to judge meter indications.
2. Illogical placement of some controls.
"Good points:
1. Very quiet receiver which, when combined with the filters and DSP puts this radio definitely in the top three receivers category with not much to pick between the three of them.
2. Bright, easy to read display, but a bit crowded. The use of colour makes it nowhere near as difficult to use as some earlier models.
3. The Digital Signal Processing of this radio is clearly superior to the Kenwood TS-870S and definitely easier to use, but not quite up to the standard of the IC-775DSP.

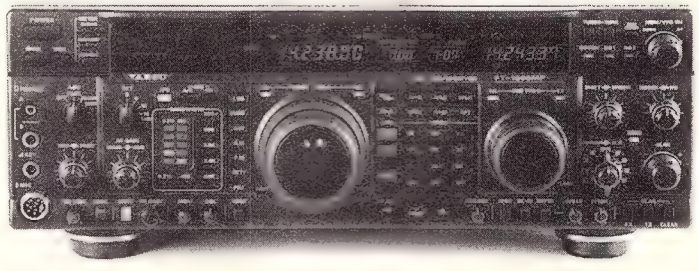
Reviewer Four: "The new Yaesu doesn't get the 200 watts of the original FT-1000, and you now have to keep the two receivers within a reasonable distance of each other, but the major cost benefit these two changes have brought is well worth the minor sacrifices.

"I use a big linear amplifier at home, so the *last* thing I want or need is a 200 watt output stage. Dropping that to 100 watts means a much lighter radio — a smaller supply, tuner and output stage. That, in turn, means it's far cheaper to build than a 200 watt radio. Look at the price of the Icom to see what I mean...

"On the air, the FT-1000MP is truly exciting. Its quadruple-conversion receiver with enhanced DSP is remarkable, particularly when compared with 'normal' radios, and it seems to get better the higher in frequency you go! There's no question it's harder to use in some areas than the IC-775DSP, but it delivers results which are virtually exactly the same as the Icom for a whole lot less money.

"I can't fathom why the major manufacturers bother to supply such ordinary hand mics with their top rigs. This radio was no different. When I plugged in the optional MD-100 desk mic the reports were suddenly much better, and I was able to digitally tailor the audio to best suit my voice from within the SET mode, which is easily the most comprehensive of any radio I have ever seen."

Yaesu FT-1000MP



Overall findings

Now for the crunch time. Which rig is the best? Before answering that, let's once again consider pricing. The Kenwood is the price leader at around $3500. The Yaesu costs $1000 more — $4495. The $7850 Icom actually sells for around $7000 if the dealer is feeling generous.

Let's first find the 'money no object' winner, then consider the situation again with pricing taken into account. For that, it's over to our review team once more...

Reviewer One: "So which did I like best? I thought the overall quality of the Icom IC-775DSP was the highest I have yet seen, both on receive and transmit, and in a careful side-by-side test with the $13,000 IC-781, it surpassed that rig on every test I could come up with. The Yaesu FT-1000MP came darned close to the new Icom but just missed on the issues of receiver quietness and straight-out ergonomics.

"If these radios were about the same price I would lean just a little to the Icom, despite the lower number of facilities. At not much more than half the price of the Icom, however, the FT-1000MP represents the best value in an HF amateur radio transceiver ever offered, and is easily my pick of this crop."

Reviewer Two: "Overall, the Yaesu is a sound rig with better performance than the Kenwood (nowhere near the Icom) but with a messier, less intuitive layout and operating system. Because of this, and probably influenced by my familiarity with Kenwood, I placed this rig in third position (but I wouldn't refuse one from Father Christmas). The Kenwood came second and the Icom first."

Reviewer Three: "On air, and on the bench, there is precious little to pick between these three radios. Transmit audio reports were all acceptable, but the Kenwood was surprisingly behind the pace. The IC-775DSP got consistently better signal reports, but with 200W we would hope so.

"Receiver-wise, things were a little different. Sadly the TS-870S let the side down with excessively high residual distortion on low level signals. Copy of weak signals was far easier on the IC-775DSP or the FT-1000MP than it was on the TS-870S.

"On SSB, it was difficult to pick between the IC-775DSP and the FT-1000MP. I felt the Icom was marginally easier to copy, but others may well disagree. If anything, the twin-PBT of the Icom a bit is easier to use than the Width and Shift IF functions of the Yaesu. On CW the FT-1000MP seemed to be just a little better.

Reviewer Four: "These three radios are all remarkably sophisticated transceivers, and each has much to offer the prospective purchaser. I suppose the bottom line — to a degree — is that the more you pay, the better the performance. Overall, the Icom is just marginally better than the Yaesu, and the Yaesu is quite a bit better overall than the Kenwood.

"Seen in comparison to the remarkably simple and straightforward Icom IC-775DSP, the Yaesu can be complex to set up the way the user wants, but on the other hand it offers more overall adjustability in the final scenario. I found that it was initially a steep learning curve — but when I had learned my way around I realised how remarkably versatile and complete a performer it became.

"In contrast, the Icom is simplicity itself — in fact, it's quite a bit easier to use than the entry-level IC-706! You tune where you want, then talk into the microphone. There's not much more to it than that. You want DSP? Push a button and the computers do the rest. The Yaesu can offer the same towering levels of performance, but to extract the very best it can offer you need to spend some time getting it set up to perfection.

"My bottom line, then, is simple: the FT-1000MP is an outstanding transceiver, particularly given its substantial price advantage over the Icom. It costs at least $2500 less than the Icom, for a solid advantage which the Icom simply cannot overcome.

"The Kenwood is by no means disgraced, but in this company — as price and common sense would suggest — it comes a very clear third."

So it seems our four reviewers have already determined the winners: on a 'price-no-object' basis, it's the Icom by a short half head. If you can afford the Icom you will be absolutely delighted with ownership.

However, the Yaesu is some $2500 less in the real world — a whopping $3355 going by the recommended retail price — and a 'real world' purchase means the Yaesu *must* take the chequered flag as the best performance HF transceiver for your money.

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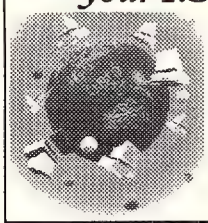

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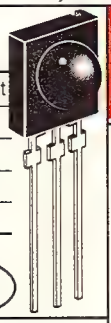

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John Batty, VK4MBK, reports on his

SHORTWAVE LISTENING WITH A DIFFERENCE

Forget the broadcast stations — here's where to find the really interesting ones...

John Batty grew tired of listening to your "run of the mill" shortwave stations some time ago and now concentrates on the "very unscheduled" operators. Few would deny that his loggings are somewhat more interesting than the commercial stations...

Radio Switzerland International, on 9900kHz at 0450z, had a fascinating segment on one of the fastest growing competitive sports in Switzerland... boomerang throwing!

The Swiss refer to boomerangs as 'Rangs' and are developing new competition models and events all the time. The Swiss recently won the Gold Medal at the world championships in New Zealand. The top Swiss 'Rang'-thrower, Thomas Sterenberger, has an exhibition shot he calls 'The Tell Shot'. That's right — he throws the 'Rang', puts an apple on his head and stands still, waiting for it to be sliced in two; he's never missed, apparently — even when he does it at night, with lightsticks on the boomerang!

For the growing number of people interested in home-schooling their children, the Home Education Radio Network ('HEN Radio') can be heard on 17,510kHz AM at 0130z, broadcast via KWHR, Nahalehu Hawaii. The mailing address is The Christian Education Network for Home Schoolers, PO Box 3338, Idaho Springs, Colorado 80452 USA, or phone 0011 1 303 567 4092.

It has been a busy month for VIP flights by various Armed Forces around the world.

Aussie 248, the Boeing 707 carrying our own Deputy Prime Minister, Tim Fischer, back from China was logged on both 11,175kHz and 13,200 kHz, between 0618z and 0638z at 37,000 feet with a position report of N18°39, E134°20, which put them south-east of Taiwan and east of the Philippines.

Night Hawk 62, one of the US Marine UH-60N helicopters of the Presidential Flight of HMX-1, was

Action in the Gulf

This article was written soon after the Americans were firing cruise missiles into Iraq and moving the USS Enterprise through Suez towards the Gulf. The USS Carl Vinson and a number of other vessels are also on station there.

8972kHz has been active throughout this period with unusual signals. This is primarily a US Navy frequency. For over an hour between 1019z and 1130z, I listened to frequent exchanges between **A9R**, a British operator, and **Trident 03**, which was American.

A9R was apparently operating either on the ground or at low altitude, as Trident at one stage notified them that they were "...coming over at Angels 1.5...". Continuous range and bearing information was exchanged between the two stations, which, when plotted, only made sense if both stations were airborne because of the distances travelled.

Trident was trying to paint A9R on their radar, without success. Several times mention was made of A9R being "...below our (radar) horizon...".

Another comment from Trident was "...we've got your mode 2, we'll let you know if you show up on our gadget...". Intriguing!

During this same time frame, station **VZ**, another Englishman, was calling **Golfball**, a US daily tactical callsign. At 1141z, **Bluestar**, a Command and Control aircraft, was called by 5560; this was puzzling until 5560 changed his callsign to Flying Tiger 60, which identified him as an F-16C/D of 74 Fighter Squadron, Pope AFB.

Another night on the same frequency had American stations **A1H** conducting frequent radio checks with **7AG**. I have no idea who they were...

Another 'Tiger' callsign, this time **Fighting Tiger 730** (Navy A-6E Intruder of VA-65?) was "...going green..." regularly with station **5BU** between 1130z and 2245z — a period of 10 hours. I cannot swear that this traffic was coming from the Gulf area, but during one exchange on this frequency I heard Kuwait Airways giving a met report (temp 43 degrees and blowing sand) on their company frequency 1kHz down the band, 8971kHz. Signals on the frequency fade in around 1100z and out at about 2300z.

The Carl Vinson is apparently carrying Carrier Air Wing 14, which is using the callsign prefix 'NK-'; this is usually the USS Constellation Carrier Air Wing.

I write the column in several stages during the month. At the very beginning of this month's cycle, at 2315z on Friday, September 13, the USA was sending more B-52H bombers (and F-117A Stealth Fighters) to the Gulf.

I was listening to **Doom 05**, a B-52 of 2nd Bomb Wing Barksdale AFB, on 11,175kHz with a call via Andersen to **Mudbug Control**, which is Barksdale. He was in stormy weather mid-Pacific, and needed to know where his next air refuelling tanker was being organised from so that he could adjust his flight plan accordingly; he asked whether his '4th AR' was still scheduled or were Strip Alert tankers available from Diego Garcia.

Communication was not very good either way due to the storms (although I had both at S8). They tried 8968kHz and eventually settled on 13,200kHz. After over an hour of phoning around **Battlestaff** (Barksdale Ops Planning) came on line to say that AR4 was cancelled as the tankers were available from Diego; in fact Doom could choose between KC-135R or KC-10 Extenders.

Doom 05 felt the need to authenticate this and asked Battlestaff to authenticate code ABB. They came back with "Victor". Puzzled, Doom asked "...what are you guys authenticating out of? Authenticate ABB!". The answer was the same. At this point, Doom 06 (obviously a sister aircraft) broke in with "05, Victor's okay...". Not convinced, 05 asked Battlestaff to "...Authenticate ACC...", to which they replied (after a break to check), "Sierra".

Before 05 could answer, Doom 06, sounding very frustrated, broke in: "...05 and Ops Planning, Doom 06; Sierra checks good...". Maybe it's not as easy as it sounds moving aeroplanes around the world at short notice...

Later on the same evening at 0715z, **Tora 81**, a KC-135R tanker from 909 Air Refuelling Squadron, Kadena, Japan, came on to say that all his ARs were completed, he was remaining on station for another 20 minutes and that his Inertial Navigation System and No 2 UHF radio were both unserviceable.

heard at 1243z on 8968kHz, with several MAINSAIL calls which none of the Global stations seemed to hear.

Last but not least, French Navy **Falcon 200**, tail number 80, was carrying the President of French Polynesia en-route to Hawaii when I heard him ICW Hickham for a long time between 0430z and 0500z on 11,175 kHz. Using the callsign FNY 5582, the pilot and the operator at Hickham were having a difficult time with each others' accents. The French operate the Falcon 200 as both a VIP transport and a maritime surveillance aircraft out of New Caledonia and Tahiti.

Military colour

HMAS Anzac FF-150, our shiny new frigate, spent a while on 8122kHz at 2315z ICW Cairns Control regarding a collision with a Sea Eagle. The bird got the worst of it, but Anzac didn't get off scot free either.

Drax, the German Navy three-masted training ship **FGS Gorch Foch** (A-60) continues to be heard occasionally in contact with Darwin Control on 4376kHz.

A possible Indonesian Naval frequency is 7335kHz; I copied shore station **U1 ICW BW** discussing another vessel with a crew of seven Indonesians and nine Chinese. Conversation was mainly in English, and data transmissions were also exchanged. Reference was made to alternate frequencies of 8978kHz and 8066kHz.

Base 1 continues to call "**Salia**", **Base 2** and **Base 3** on 8126; heard this time at 1020z.

An Australian station with the callsign **Manta Ray** came up on 7427kHz at 0247z. The entire call took maybe seven seconds, including two initial tune-up carriers of one second each. Only one call was made and I was too slow tuning the carriers to make out who Manta Ray was calling.

Utilities

VTK3, Tuticorin Naval, India, sending a CW marker on 13,340kHz at 0935z.
CBV Playa Ancha Radio, Chile, with CW on 4349kHz at 0847z.
HZG, Dammam Radio, Saudi Arabia, still audible at S4 with CW on 13,077kHz at 0320z.
DAN, Norddeich Radio, Germany, at S9 with CW on 8484kHz at 0519z.
OLX4, Prague, Czech Republic with CW on 8142 at 0658z.

X-Files

9131kHz at 0534z and again at 2100z, an English-speaking Asian female operator with slow single phonetic letters. Same operator each time.
9264kHz at 1123z had a female EE operator with five-figure groups at S7.
8971kHz had a very weak Spanish-speaking female op with five-figure/letter groups at 0410z, followed by music. This station has been around since at least 1994 but is not often heard in Australia.

11,175 does it again

The prolific 11,175kHz produced lots of things this month. Here's a sample...

Aussie 249 at 0136z enroute to Kwajelein...

Shocker 41, a B-1B Lancer of 384 Bomb Wing, discussing severe lightning at McConnell AFB (**Shocker Control**) at 0205z...

Jackal 01, a HC-130P SAR Hercules of 17 Special Operations Squadron, Kadena at 0730z...

SA-759, a US Navy CH-46D helicopter of HC-3 normally based at NAS North Island, was ICW Yokota at 0600z, while at the same time the base station **Ocean Lord**, Command Post of another helicopter squadron, HSL-43 also at North Island, was on frequency.

A little later, at 0616z, **SA-759** was called up by **LH-742**, a US Navy P-3B Orion of VP-93, NAF Detroit. A few minutes before, LH-742 had been given a Terminal Area Forecast by Kadena, so they were operating in the same area. They both QSYd to 12,225kHz. Possibly the Orion had the helicopter visually, because they said "...It's kinda cold up here, are you guys getting the weather down there?".

Bunk 41, another E-3C AWACS aircraft of the 552nd at Tinker AFB, was passing modem traffic to Yokota at 2243z, as was **AE-300**, a US Navy A-7E Corsair of VA-37 at 2228z.

LT-563, a Navy P-3B of VP-62, was sending modem traffic for relay to callsign **Illustrious** via Andersen AFB Guam at 0644z.

Doom 81, a B-52H from 2 Bomb Wing, Barksdale AFB, ICW McDill at 2205z...

Hippo 43, a U-2R aircraft of 9th Reconnaissance Wing, Beale AFB, was heard working Yokota at 2240z/2245z.

Dragon 22 came on frequency at 2240z working Elmendorf, and although this is another U-2R callsign, it can also be Navy S-3B Viking aircraft of VS-29, North Island, and given the other North Island-based units' activity in the area I would guess that the Viking is the more likely of the two.

Two US Navy Grumman C-2A Nightingale twin-turboprop Carrier On-board Delivery medivac aircraft, callsigns **Password 430** and **Password 432**, were also heard at 0717z. They belong to VRC-30 of NAS Alameda.

MILITARY ACTION...

The military frequencies have been fairly active in general, with several interesting catches...

8975kHz at 0215z had **Buckshot 15**, an RAAF F-111, asking Amberley via AF Townsville for more details of their fifth 'target', which turned out to be Milanda, near Cairns.

Other loggings on this frequency include **Orangeade**, a USAF daily random tactical callsign; he was ICW Yokota at 1800z, QSYd to 11,175kHz and was heard again ICW McClellan at 1817 asking for the primary and secondary NIGHTWATCH frequencies. Primary given was 'Zulu 165' — can anyone ID this frequency?

Penguin Richmond was doing ground radio checks with AF Townsville at 2358z; **Striker 231**, a P-3 Orion, was on at 0527z; **Aussie 241**, another P-3, required Customs and Immigration at Edinburgh when heard at 0637z; during the contact he QSYd to 11,199kHz.

Hudson 511, a New Zealand-crewed aircraft, was operating to and from East Sale in Victoria at 0635z; he QSYd to 11,244kHz and came up as **Hudson 510** ICW AF Auckland and AF Woodburn, sending drill messages. A number of these Kiwi-crewed aircraft have been doing similar training from East Sale lately.

Finally **Mariner 254** was operating out of Amberley at 2215z ICW AF Townsville after a QSY to 9025kHz.

The US-dominated frequency of 8968kHz has also been busy; a very unusual catch on here was **FDC**, a French Air Force CW station at Metz, France. He was sending a 10wpm channel marker at 0810z.

Darkstar 123, an E-3 Sentry AWACS aircraft of 522 AWACS at Tinker AFB came up at 1025z; **Navy Degar 09**, on his way to Diego Garcia, was becoming quite peeved at 1030z and 1120z because he was trying to call home base via phone patches and it seemed that no matter what number he tried, no-one was home.

Reach 0010, enroute to Travis AFB, was having a conversation with another aircraft at 1045z, saying "We're at 35,000 feet above Montana — where are you?". **Woodland**, another daily tactical callsign, was asking Andersen for the NIGHTWATCH frequencies — this time they were given as Zulu 130 and Zulu 175. Australian stations on 8968kHz included **Smoke 1** and **Smoke 2**, with a call via AF Townsville regarding AVGas requirements at 1154z; also **Townsville Air** was having great difficulty contacting **Townsville Ground Party**, despite a great deal of relaying done by AF Sydney around 1224z.

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In my *Online* column this month you will read about some software that is supposed to have surfaced to assist us in this task.

When you mention trunking, people jump to the conclusion that you are always talking about the 800 MHz trunking systems. Not necessarily so!

In this country there are a number of different trunking systems in use. For example, the Victorian Government Trunking Network (now owned and operated by Telstra) uses the standard MPT 1327 trunk protocol and operates in the 160 to 166 MHz band.

The New South Wales Government Trunking Network also uses MPT 1327 and operates in the 412 to 415 MHz band, and Telstra itself operate its own commercial trunking network in this band.

Here are the channels in use:

415.000000	416.350000	417.187500	417.987500
415.500000	416.362500	417.200000	418.000000
415.575000	416.375000	417.212500	418.012500
415.587500	416.387500	417.225000	
415.600000	416.450000	417.237500	
415.612500	416.46250	417.250000	
415.625000	416.475000	417.262500	
415.637500	416.487500	417.325000	
415.700000	416.500000	417.337500	
415.712500	416.512500	417.350000	
415.725000	416.575000	417.362500	
415.737500	416.587500	417.375000	
415.750000	416.600000	417.387500	
415.762500	416.612500	417.450000	
415.825000	416.625000	417.462500	
415.837500	416.637500	417.475000	
415.850000	416.700000	417.487500	
415.862500	416.712500	417.500000	
415.875000	416.725000	417.512500	
415.887500	416.737500	417.575000	
415.950000	416.750000	417.587500	
415.962500	416.762500	417.600000	
415.975000	416.825000	417.612500	
415.987500	416.837500	417.625000	
416.000000	416.850000	417.637500	
416.012500	416.862500	417.700000	
416.075000	416.875000	417.712500	
416.087500	416.887500	417.725000	
416.100000	416.950000	417.737500	
416.112500	416.962500	417.750000	
416.125000	416.975000	417.762500	
416.137500	416.987500	417.825000	
416.200000	417.000000	417.837500	
416.212500	417.012500	417.850000	
416.225000	417.075000	417.862500	
416.237500	417.087500	417.875000	
416.250000	417.100000	417.887500	
416.262500	417.112500	417.950000	
416.325000	417.125000	417.962500	
416.337500	417.137500	417.975000	

So, as you can see from the large number of frequencies, what we see is a *huge* high-capacity trunking system in operation, and I believe it operates in all of the major capital centres of Australia.

The network is capable of voice and data, with many users as I understand it using the channels for direct telephone interconnect as well. As you are all well aware by now, listening in on any conversation that is connected to the telephone network is illegal in this country, so if you happen to stumble across one by accident, just press the SCAN button once more to resume.

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.....compiled by Michael Evans...michael@tbsa.com.au....

Where has the year gone!? It seems like only a month or so has passed since my last birthday... and that was in January, folks. *(Ha! A sure sign you're getting old, Michael — like me! Ed.)*

Data on the air

Advances in radio technology through the years have seen a huge increase in the number of companies which are now using the radio waves for sending out and receiving data.

The water companies do it to monitor dam levels in remote areas, the power companies do it to see if their power distributions sites are okay, and the now-familiar taxi data terminals use it for sending and receiving their next jobs.

The use of data over radio is not restricted to just a particular part of the radio spectrum either. It happens from HF and upwards, and can take many different forms. Some data will be just FSK, which is Frequency Shift Keying, while others will be using Digital Encryption.

Today's Formula One racing teams rely heavily on the use of telemetry for data on how their motor cars are performing — even your local supermarket could be using it for stock ordering.

Amateur radio operators have been doing it for years — yes, Packet Radio is just that: sending data over radio. It's nothing new, but the technology has increased to allow higher data transfer rates, better error correction and as such Telstra are developing remote access via radio to the internet.

Here is a short extract of some frequencies and types of companies using 'data on the air'

For the HF buffs...

0.013910	Torch Publishing Co Pty Ltd	NSW
0.021975	AAP Telecommunications Pty Ltd	WA
0.034500	Queanbeyan Leagues Club Ltd	NSW
0.085000	General Motors Holdens Automotive Ltd	SA
0.105000	General Motors Holdens Automotive Ltd	SA
0.135125	General Motors Holdens Automotive Ltd	SA
0.158125	General Motors Holdens Automotive Ltd	SA
0.284000	Department Of Defence	NT
0.320000	Australian Maritime Safety Authority	Qld
0.470000	Toyota Motor Corporation Australia Ltd	Vic
1.650000	Department Of Defence	NT
1.665000	Geoterrex Pty Ltd	WA
1.781500	Department Of Defence	WA
1.796000	Seismic Supply International Pty Ltd	Qld
2.696000	Department Of Defence	WA
2.757500	GEC Marconi Systems Pty Ltd	SA
2.829000	Racal Survey Australia Limited	Aust

For the scanning buffs...

450.025	Adidas Australia Pty Ltd	Vic
450.025	Australian Cooperative Foods Ltd	NSW
450.025	Bowen Shire Council	Qld
450.025	Bundaberg Port Authority	Qld
450.025	Finemores Pty Ltd	NSW
450.025	Finemores Pty Ltd	Vic
450.025	Link Telecommunications Group Pty Ltd	Vic
450.025	Murweh Shire Council	Qld
450.025	Parkes Shire Council	NSW
450.025	Pficonprod Pty Ltd	NSW
450.025	Queensland Alumina Ltd	Qld
450.025	Queensland Nickel Pty Ltd	Qld
450.025	Skypage Pty Ltd	Qld
450.025	Sugar Research Institute	Qld
450.025	The Broken Hill Proprietary Co Ltd	NSW
450.050	Comalco Aluminium Bell Bay Limited	Tas
450.050	West Australian Petroleum Pty Ltd	WA
450.075	Electricity Commission Of NSW	NSW
484.075	North West County Council	Qld
484.225	Royal Automobile Association Of SA Inc	SA
484.500	Hamersley Iron Pty Ltd	WA
484.825	Australian Water Technologies	NSW
484.850	ACI Operations Pty Ltd	Vic
484.875	Field Air Ballarat Pty Ltd	Vic
484.975	John Lysaght (Australia) Limited	NSW
484.975	Saxonvale Coal Pty Ltd	NSW
484.975	Sunshine Television Network Ltd	Qld
485.050	South Australian Water Corporation	SA
485.225	Mount Isa Water Board	Qld
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485.550	TNT Australia Pty Ltd	NSW
486.125	Hamersley Iron Pty Ltd	WA
487.725	National Roads And Motorists Assoc	NSW

There are a number of commercially-available off-air data decoders — units such as the stand-alone M400 decoder or the PC board M1200 are just two that are very popular. However, be sure to check the data format that you wish to monitor first, as it could very well be a proprietary system and be very hard to decode.

These units come with either inbuilt software in the case of the M400 which allow for the receptions of different data formats, or the bigger brother the M1200 that takes up a slot in your PC. With the software on the disk you can receive pagers, ACARS, Fax, Morse and RTTY just to name a few.

For a review on the M1200 PC card, see the October 1996 edition of Radio & Communications, in which Richard Jary reviewed the unit. Several of our advertisers stock this equipment so give them a call for more details and pricing on this new exciting aspect to monitoring.

Over time I have received numerous requests from people asking for information about decoding the data sent

Whoops — I forgot about Auntie!

Back a few months ago now, I did a quick round up of frequencies being used in the television industry around Australia.

In the process I only covered the commercial stations and forgot all about the ABC. This was an oversight on my behalf, for which I apologise, and fix herewith:

128.900	Australia-wide	473.425	WA
159.700	TAS	473.700	VIC
159.940	SA	474.275	QLD, VIC, SA, TAS
161.230	WA	474.350	SA
161.6125	NSW	474.375	SA, VIC
164.500	NT	474.550	SA, TAS
164.500	SA, TAS	474.575	Australia-wide
171.780	WA, SA, TAS	474.650	ACT, SA
171.900	SA, TAS, WA	474.700	SA
461.925	TAS	475.175	ACT, SA
463.850	WA	479.475	NSW
471.575	VIC	479.775	NSW
471.875	QLD	479.850	SA
472.125	Australia-wide	482.000	NSW
472.450	QLD, VIC, WA	484.925	QLD
472.525	ACT, NSW	487.475	VIC
472.550	WA	487.925	QLD, NSW
472.975	SA	493.950	VIC

These are a mixture of both news, engineering/outside broadcast and the studio frequencies used by our national broadcaster.

back and forth by the hundreds of taxi companies across the country that are using the new digital dispatch system.

From what I have been able to find out — which I must admit is not a terrible lot — the system is using a proprietary algorithm to encode the data, and as such it is very difficult, if not outright impossible, to decode the data without the correct commercial hardware. So there you go, if you want a challenge prove me wrong!

Carol strikes again

Well, to get you all into that festive mood, let's take a look at some of the frequencies that will be used for the **Carols By Candlelight** television coverage in Melbourne at the Sidney Myer Music Bowl.

GTV-9 Melbourne provides the excellent TV coverage each year, and it is a spectacular worthy of all of the praise that it receives every year.

The event is really huge. It takes around 200 staff from Channel 9 — not all of them from Melbourne — to put the event to air on the night, and it takes quite a few more both before and after to put this all together.

To the very dedicated team from Channel 9 (several of whom read this magazine) and the Royal Victorian Institute for the Blind that put this event together each year, well done.

Channel 9	
485.300	Talkback
485.425	Talkback
485.950	Talkback
486.375	Talkback
461.575	Engineering
163.5875	Engineering
494.3750	Engineering

The technical expertise for the lighting, sound and staging style of the event is crewed by people from the Victorian Arts Centre as well as the GTV crew. The channels for them are:

467.500
488.275
494.850
494.925
519.675

Well, that's it for this month and indeed almost for this year. Our January issue, however, goes on sale just prior to Christmas, so check it out for your holiday reading... and 'til then happy listening folks.

Communal base station services

Last month we took a brief look at some of the major players in the field of **Communal Base Station** services, and this month we take a peek at a few more to assist you in tracking down your favourite service. Even if you don't know who is using these services, monitoring a communal base station can be interesting listening:

Victoria Communications — Melbourne

486.350	473.025	466.200	465.500	465.575
465.050	471.125	418.500	470.350	472.825
464.175	472.425	472.250	473.000	472.400
470.500	419.150	419.475	491.300	470.825
472.325	472.350	473.525	505.625	506.925
506.525	505.925	506.900	465.200	470.650

Simoco Pacific Networks — ACT

463.250	476.450	476.600	476.550	474.350

Simoco Pacific Networks — NSW

471.075	473.925	470.825	488.175	470.525
491.750	465.275	506.675	506.925	150.2125
150.4625	150.5375	493.850	474.250	473.750
489.325	493.425	507.550	492.075	473.775
474.225	407.625	473.625		

Country Wide Communications — NSW

473.150	474.625	474.650	473.450	474.050
473.750	474.350	474.600	473.425	474.025

Radio Technologies — VIC

472.725	490.975	492.025	490.300	493.250
473.875	474.775	474.225	472.975	472.925

Commex Communications Corporation — QLD

507.100	473.450	473.350	474.150	164.600
161.675	035.050	463.900	470.850	078.525

Simoco Pacific Networks — QLD

464.750	476.425	470.500	494.525	488.825
507.150	507.750	470.050	470.950	473.050
473.950	467.225	488.775	486.475	490.875

Simoco Pacific Networks — South Australia

463.075	487.450	473.750	507.500	467.750
473.175	486.550	486.250	151.1375	507.125

Gencom Services — NSW

475.450	163.925	473.100	474.300	162.900
163.500	071.9375	473.350	508.300	488.475

Simoco Pacific Networks — Western Australia

486.475	487.575	462.725	466.150	463.925
465.550	463.600	488.175	488.475	465.850
488.575	488.875	461.400	462.300	489.975

Simoco Pacific Networks — Victoria

507.650	508.675	508.950	508.425	507.475
486.600	465.650	492.375	507.775	508.725
508.075	509.025	508.675	508.850	508.550
471.175	509.450	473.200	473.575	508.375
472.900	474.250	509.400	493.000	

For those of you unaware, Simoco Pacific Networks has taken over all of the sites previously known under the name Philips Communications.

You may ask who uses these types of services? Well, the answer is just about anyone. Anyone who needs communications has good reason to go to a communal base supplier. The base operators generally have excellent sites that are up nice and high and give good coverage, and to be a good operator they need to have top-notch equipment, and be well serviced.

So you will hear everything from couriers, security companies, fast food delivery companies, tow truck operators, taxis, plumbers, electricians... and the list goes on.

Baudwalking

Off we go into the wild blue yonder... (Actually, the USAF would do me in if I tried to sing that song!)

Aero-listening in the Low Countries is the title of a new Web page in The Netherlands. Hans Wildschut is the aero-DX editor of the Benelux DX club bulletin. Hans has a couple of projects under way. One is a detailed study of aero frequencies in the 5 and 6 MHz ranges, and he is exploring ACARS (a digital messaging system used by aircraft in flight). Dial up http://web.inter.NL.net/hcc/Hans.Wildschut/ and take a look.

Some of you may know of Bob Evans' activities in utility monitoring and in the aero band in particular. In 1989, he authored the *Aeronautical Communications Handbook-HF Edition*, followed by the *Worldwide Aeronautical Communications Frequency Directory* in 1991.

His latest book, *The Worldwide Aeronautical Communications Frequency Directory, Second Edition*, was published in April of 1994. He now has a page *Radio Communications Monitoring* that covers the last column in the USA's Monitoring Times magazine, an article in the USA's Popular Communications annual, Universal Radio's "The RTTY Listener" (a newsletter limited to customers of Universal Radio, Ohio, USA), and a number of other sources.

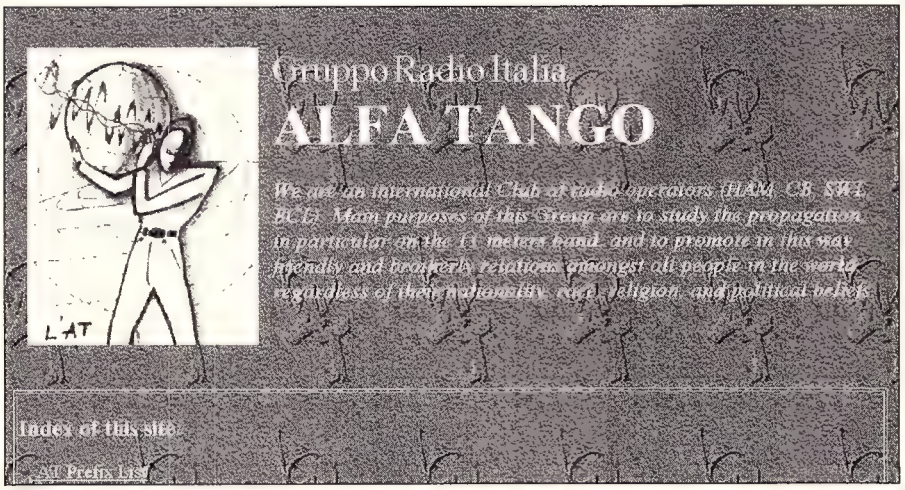
The site is visually very attractive, but the combination of graphics and tables appears to us to make the pages a bit slow to load. (If you are using Netscape, you can open up a second browser window and continue searching elsewhere while the Evans page loads!)

Though it may be slow, if you are interested in utilities listening, the site at http://www.magic.ca/~revans/radio.html is well worth a visit. Evans has some other interests too, unrelated to radio and communications. As long as you are on the site, click on the homepage link and take a look.

In addition to the Georgia Tech search tool, we found another site that lets you search for navigational beacons by call or by frequency.

It's called **Chris's NAVAID Search Tool** and he writes: "The information presented here is derived from an FAA (USA) navaid database (available by anonymous ftp from aviation.jsc.nasa.gov). The data is believed to be accurate and up to date, but you may not use it for navigation or any other purpose which may endanger human life! You are responsible for how you use this information!"

We searched on a few local beacons we knew of and the (correct) data was returned quickly. Dial up http://www.mdsroc.com/navaid and have a look.


Gruppo Radio Italia
ALFA TANGO
We are an international Club of radio operators (HAM, CB, SWL, BCL). Main purposes of this Group are to study the propagation, in particular on the 11 meters band, and to promote in this way friendly and brotherly relations amongst all people in the world, regardless of their nationality, race, religion, and political beliefs.
Index of this site
Call Prefix List

Program notes

Glenn Hauser's **World of Radio** airs on WWCR, Radio for Peace International and the World Radio Network. The first show airs UT Thursdays on WWCR, and with luck RFPI gets the current show on the air by Saturday.

Kevin Hecht provides a page, in cooperation with Hauser, with the current schedule. Do not make a mistake typing this one: http://hudson.idt.net/~khecht19/radio/shortwave/ghauser/. Additionally, Hauser now has an e-mail address: ghauser@hotmail.com.

We ran across yet another site that has a compilation of USA domestic radio stations with streaming audio on the 'net. Both RealAudio and Streamsites are listed here. We didn't count the number, but there is quite a few. Dial up http://www.radiotv.com/ and have a look.

Hamming it up

Gruppo Radio Italia Alfa Tango's home page states "We are an international club of radio operators (HAM, CB, SWL, BCL). Main purposes of this group are to study the propagation, in particular on the 11 metre band, and to promote in this way friendly and brotherly relations amongst all people in the world, regardless of their nationality, race, religion, and political beliefs."

The club seems to be oriented to 11m operators who chase DX on 11m just as radio amateurs do. There is a DXCC and IOTA list, a 'most wanted' list arrayed by club members, a worldwide club meeting tabulation, a photo album and much more.

From this side of the Pacific, it does not look like there is an Australian chapter. Here is your chance to get the ball rolling. You'll need a frames- and tables-capable browser, then connect to http://mbox.nau.it/alfatango/. (See left.)

Have an amateur license and planning to travel to Brazil? Now you can get help with a reciprocal license — over the 'net. The Rio de Janeiro's branch of the Brazilian Hamradio League (PY1AA) has posted a Portuguese and English page. The national association's name is Liga Brasileira de Radioamadores, but it is often and sensibly abbreviated to LABRE.

Check out the LABRE-RJ at http://www.embratel.net.br/infoserv/online/wcenter/py1aa.html#ingles. Note the "#" sign. It is a bookmark symbol that takes you directly to the English language portion of the page.

Bored with HF operation? It is tough at the bottom of the solar cycle. After you have worked 5BDXCC, WAS, and USA counties towards CQ's County Award, what else is there to do?.

One option, as Jim Smith tells us each month, is to pursue an islands award. **IOTA** — Islands On the Air — is another challenge that will keep you busy for many years. We found a site that has a current list of islands, the start of a FAQ, IOTA contest software, past contest results and suggested frequencies.

The only downer, in my opinion, is that one has to send $8 to W4BAA or other IOTA 'distributors' for the full rules. I do not understand why the rules cannot be placed on the Web site. Nevertheless, this site offers more than enough information to get you started. Dial up http://www.systemtechnik.tu-ilmenau.de/ham/ ham_iota.html and have a look.

Propagation

Speaking of the bottom of the solar cycle, Jan Alvestad maintains the Solar Terrestrial Activity Report on a daily basis. It includes a two-month graph of the solar flux, A-index and sunspot count. Narratives detail the events of the last day. Take a look at http://home.sn.no/~janalv/solar.html.

Technology advances, and we get older...

Global Positioning System (GPS) technology in the USA is starting to become commonplace. Using geosynchronous satellites, the black boxes provide precise navigation, latitude and longitude. Hand-held GPS units are under $400, and certain high-end vehicles have GPS equipment built into the car. Some car rental companies in larger cities are offering GPS-equipped vehicles with local maps.

The tracking systems used by James Bond in Goldfinger and other Bond films are not so far fetched any more. Want to learn more? Don't want to get lost in the bush? We have found a Web site that seems to have it all from the basics on up the scale. It is Global Positioning System Overview by Peter H Dana, Department of Geography, University of Texas at Austin. Go back to school and connect to http://www.utexas.edu/depts/grg/gcraft/notes/gps/gps.html.

Broadcasting news and updates

Are you involved in **professional broadcasting**? I've found a site with hundreds of links to professional sources of equipment, services, programming, and other information. Check out the Broadcast Net at http://broadcast.net/mainmenu.html. They have another page of additional page of links at http://broadcast.net/blinx.html. It will keep you busy for many hours.

I hardly expected to find a Web page for a broadcaster in Antarctica, but there is one alive and well. **Ross Island Radio** 104.5 proclaims "Antarctica's most listened-to talk radio. Boldly going where no-one would want to go!" There are no audio clips, but there is a studio photo... and an amusing Rumor Mill page that is worth a grin or two. Connect to http://daemon.net/ and have a look.

RFO
POLYNÉSIE FRANÇAISE
Radio Télévision Française d'OutreMer
French OverSeas Radio and Television
BP 125 Papeete TAHITI
98 713 Polynésie Française
Téléphone: 689 43 05 51
Messagerie Electronique / e-mail: *rfopolyfr@mail.pf*
Directeur : Claude RUBEN
Rédacteur en Chef : Patrick DURAND GAILLARD
Directeur des Programmes : Jean-Raymond BODIN
• Banques d'images : magazines.
• Film stock.

Radio Télévision Française d'OutreMer, Tahiti, is heard around the world on its 19m frequency that varies around 15,168 kHz. We found an information page (above) with a contact person, an e-mail address, telephone number and a photo of a studio. Unfortunately there is no broadcast schedule, but the page is a start.

Connect to http://www.tahiti-explorer.com/rfo.html and have a look. Actually we really think that Radio and Communications ought to send me a couple of airplane tickets so we can get the inside scoop for our readers... especially now that the Northern Hemisphere winter season is upon me! *(Okay Tom... if you send me the tickets for me, the XYL and kids. Ed.)*

In recent years **Radio Canada International**'s original programming has decreased dramatically as resources go away. A number of threatened closures have been avoided, but the station seems closer to the brink of disaster. RCI carries many of the Canadian Broadcasting Corporation news and programs, and an RCI page at http://www.radio.cbc.ca/radio/rci/rci.html. It is little more than a broadcast schedule.

Perhaps now RCI has taken a small step back from the brink with the latest promise of funding. RCI has a new Web page, http://www.rcinet.ca, that lets the visitor select the following pages in English or French. By the way, we also turned up a ....☞

The software front

*There is a new Windows software program that draws **great circle maps** for any location based upon either grid square or latitude and longitude. It allow the user to set the level of detail and the range in kilometres or miles to be drawn.*

If you specify a DX target, a line indicating the beam heading will be drawn. Written by Roger Hedin, SM3GSJ, in Visual Basic 3.0, you will need the VBRUN300.DLL in your Windows' SYSTEM directory. (If you do not have the DLL, it can be acquired from the Microsoft Web site.) You can print the map, but the author cautions that some systems with less than 16MB of memory will have trouble saving the screen display as a BMP file.

This file is available via FTP to the Oakland server: ftp://oak.oakland.edu/ pub/hamradio/arrl/bbs/programs/gcmwin21.zip.

*I saw a note from Jan Arkesteijn (jarkest@pi.net) mentioning a new release of his **Japan Radio Company NRD-535** receiver software. It is called TURBO535. Release 3 is called TURBO537.ZIP and can be found on the anonymous ftp server ftp.funet.fi in the directory /pub/ham/rigctrl. I checked out this freeware control program and it is worth a go if you have Windows 3.1.*

The program fired up without difficulty, and allowed manual control of the receiver, reading memories and more. The frequency files are text files, and it will import such files as put out by ADDX and BDXC on the rec.radio. shortwave newsgroup. This too is a Visual Basic 3.0 program. Everything but the VBRUN300.DLL file is provided.

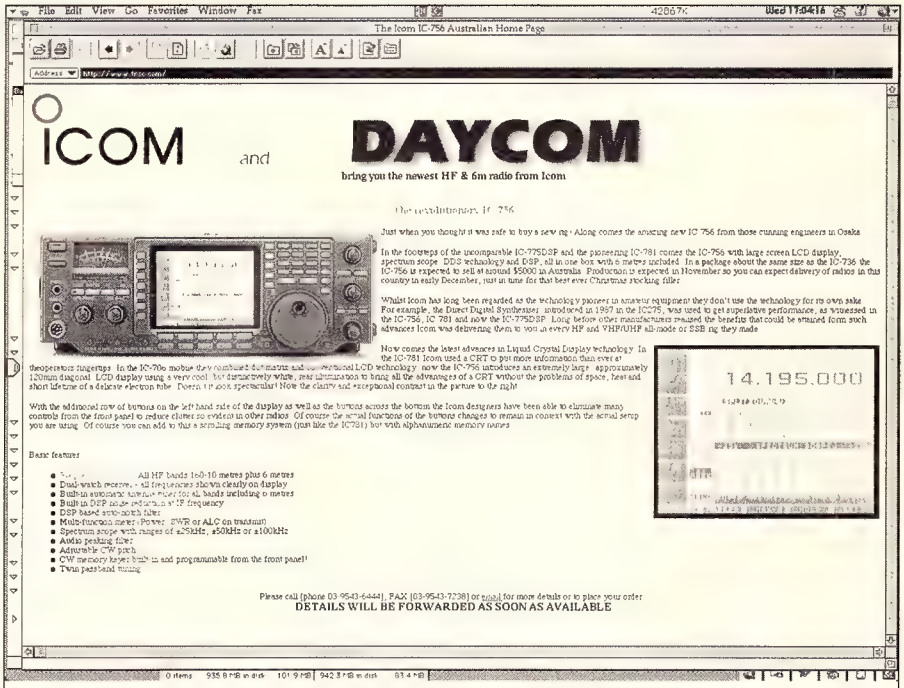
Baudwalking
(continued)

RealAudio page for the CBC itself. That is located at http://www.radio.cbc.ca/.

Croatian Radio Television has made a minor change in its URL, dropping the "com". The new address of the English language page is http://www.hrt.hr/index_eng.html. There is now a regional broadcaster on the same server. **Radio Pula**'s page is http://www.hrt.hr/hr/hrpula/index_hrv.html.

Mid West Radio, Mayo, Ireland, attracted a lot of attention on Saint Patrick's Day, 1996, when it leased time on BBC transmitters for two broadcasts that were heard around the world. Judging from the comments in the newsgroup rec.radio.shortwave, apparently the station still has not caught up with the flood of e-mail and postal mail. Now it has a Web page on the Internet. Periodically check the page at http://www.mayo-ireland.ie/Mayo/Towns/BallyH/MWR/MWRhome.htm to see if the station will go on shortwave again in 1997.

The first station on the Web from Peru showed up in September. It is in Spanish, there is a fancy station logo, a program listing and schedule. It is **Radio Tacna** at http://principal.unjbg.edu.pe/radio/radta.htm.

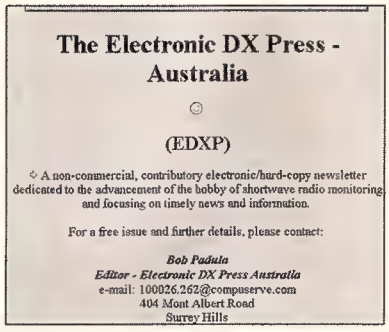

The Icom IC-756 Australian Home Page
ICOM
and
DAYCOM
bring you the newest HF & 6m radio from Icom
14.195.000
DETAILS WILL BE FORWARDED AS SOON AS AVAILABLE
It's amazing what you can find on the Net. Icom IC-756, eh...?

Another South American broadcaster showed up on the Web at an unofficial site. It is a page, at the University of Maryland, for **Radiodifusion Argentina al Exterior** (RAE): http://www.glue.umd.edu/~aap/texto/rae.html. It is nothing more than a text file of a transmission schedule, but hopefully the individual has the connections to see that this information stays up to date.

Another broadcasting regulating authority has appeared on the Web. The **Independent Broadcasting Authority** (IBA) is an independent statutory body responsible for the regulation of the South African broadcasting industry. The IBA was created by

New mailing lists

Bob Padula has been known in the Australian SWL community for years, associated with the Australian DX Club. (We mentioned last month that its Web pages had been removed from a server.) Bob has been publishing an e-mail-only newsletter called "The Electronic DX Press". It is not a compilation of loggings, but rather it focuses on news and developments in the shortwave broadcasting environment.


The Electronic DX Press - Australia
(EDXP)
A non-commercial, contributory electronic/hard-copy newsletter dedicated to the advancement of the hobby of shortwave radio monitoring and focusing on timely news and information.
For a free issue and further details, please contact:
Bob Padula
Editor - Electronic DX Press Australia
e-mail: 100026.262@compuserve.com
404 Mont Albert Road
Surrey Hills

On his new Web site Bob writes that it is "...a non-commercial, contributory electronic/hard-copy newsletter dedicated to the advancement of the hobby of shortwave radio monitoring and focusing on timely news and information."

For a free issue and further details, please contact: Bob Padula, at 100026.262@compuserve.com. His Web page has more information: http://www.wp.com/edxp/. Padula also provides much of the shortwave DX news for the weekly DX program **Pacific DX Report**, broadcast over Trans World Radio, KTWR, Agana, Guam. The broadcast times are Saturdays 0820 UTC on 15,200 kHz; Saturdays 0940 UTC on 11,830 kHz: Mondays 1615 UTC on 11,580 kHz.

Special full-detailed EDXP QSLs are offered for correct reception reports, which should be sent to Bob Padula, 404 Mont Albert Road, Surrey Hills, Victoria 3127, Australia. Return postage of 1 IRC or US$1 is appreciated.

Risto Kotalampi (rko@iki.fi) writes in the rec.radio.newsgroup "...**Radio-Internet@kotanet.fi** is a new discussion and information list for all shortwave/medium wave/fm/utility listeners. The list is for discussion about how to use Internet for radio hobby and inform subscribers about new web sites, new emailing lists etc. You can subscribe the list by emailing to listserv@kotanet.fi. Put to subject line 'subscribe radio-internet' or same line to the body."

Risto Kotalampi is also the principal behind a DXer's newsletter called **Hard Core DX** designed for the shortwave/medium wave listener who tries to listen to rare, weak and previously unheard broadcasting stations. There is no fooling around here. You may have heard Rich McVicar, formally of HCJB, mention the newsletter on "DX Partyline". Now you can get more information on joining the group at http://www.kotanet.fi/hard-core-dx/.

Bytes and pieces...

SV1XV has assembled a page of "Utility listening-related web resources" grouped by military, communications protocols and systems, communication security, diplomatic and espionage, maritime, and a miscellaneous category. We found some interesting items, including a bunch of USA agencies that could well be considered to be in the spook business. This collection, so far as we can tell, supplements the links found on the Worldwide Utility News Club (WUN) site at http://www.leonardo.net/berri/wun/. Dial up SX1XV's page at http://users.hol.gr/~sv1xv/list1.html.

The Worldwide TV-FM DX Association is dedicated to the observation and study of the propagation of long distance television and FM broadcast signals at VHF and UHF. The monthly publication, the VHF-UHF Digest, contains members' DX loggings, TV and FM news (including actions of the FCC and CRTC), changes in station ownership and network affiliation, and various technical articles as well as other items of interest to the TV and FM DXer. Though the club focus is on North America, the technical articles may be of interest to enthusiasts in Australia. There is also a fairly decent sized listing of links. The home page is http://www.users.sccoast.net/daustin/wtfda.html.

And in September, without notice or explanation, Hans Bakhuizen's Broadcasting Corner pages at http://www.wp.com/hansbakhuizen/ were closed. It asks that all references to the site be removed. It's a shame, as there was a lot of interesting broadcasting technology information on the site. We found out the 'why?': Bakhuizen has left Radio Nederland to work for the government.

the Independent Broadcasting Authority Act 153 of 1993.

"The IBA is charged with the promotion of a diverse range of sound and television broadcasting services on a national, regional and local level which, when viewed collectively, caters for all languages and cultural groups and provides entertainment, education and information. The work of the IBA includes:
• licensing broadcasters; • formulating broadcast policy; • monitoring licence and program conditions; • planning the broadcast frequency spectrum;
• receiving, hearing and adjudicating complaints; and • regulating the broadcasting industry as a whole."

Connect to the IBA page at http://wn.apc.org/iba/.

Travelling to Israel? While tracking down the winter schedule of **Kol Israel**, we ran across the "The (almost) Complete Guide to the WWW in Israel". On its Entertainment page there are domestic TV and radio stations (and some programming information) listed therein.

Notably the link to "Israeli Radio World Broadcasts" does *not* work (or at least it didn't when I checked it), but the rest of the links are operational. Dial up http://gauss.technion.ac.il:80/~nyh/ israel/entertain.html and page down to the bottom third of the Web page.

The Kol Israel multi-language shortwave schedule is still found at http://www.artificia.com/html/news.cgi — but the staff was very slow to update the schedule data when Israel went to winter time last September.

The Taiwan broadcast Web sites move around faster than the ink dries while printing this magazine. The third move of the **Voice of Free China** now takes us from the old URL of http://bcc.com.tw/vofc.htm to the new URL of http://bcc.com.tw/global/vofc/vofc.htm. And the **Voice of Asia** page moved from http://bcc.com.tw/voa.htm to new http://bcc.com.tw/global/voa/voa.htm. Both pages are still only in Chinese.

In further digging, we found a page with the current VOFC English language broadcast schedule at http://gio.gov.tw/info/yearbook/nf_html/ch1603t.html. The page is a subset of a media page at http://gio.gov.tw/info/yearbook/nf_html/ch16_2.html#t3 offering a history of broadcasting dating back to 1918.

The text discusses the current **Broadcasting Corporation of China** (BCC) responsible for the VOFC and VOA pages above. If one backs all the way to the home page at http://www.gio.gov.tw/ there is a multi-language (French, Spanish, English, German and Japanese) site belonging to the Government Information Office, ROC on Taiwan.

Radio Habana Cuba has an "official" Web site courtesy of WhitePine Consulting. The firm footnotes the page, "providing computer support for non-profit organisations that work for social change and challenge the status quo". Clearly, most links do not work and there is no schedule.

But the firm's home page insists this is "official", so it may pay to keep an eye on it... just in case it comes alive. The URL is http://www.whitepine.com/radio_havana/.

And finally, **The Chicago Tunnel Company** was a small free radio station that broadcast on the shortwave band in 1991. Preserved on the Web page are actual clips, recorded live from the studio 40 feet below the corner of State and Madison Streets in Chicago. There is a brief history of the station, and links to other pirate radio sites. Dial up http://www.imagescape.com/wzrd/tunnel.html and have a look (and listen).

Ramping up the Internet
... an occasional series of hints and tips

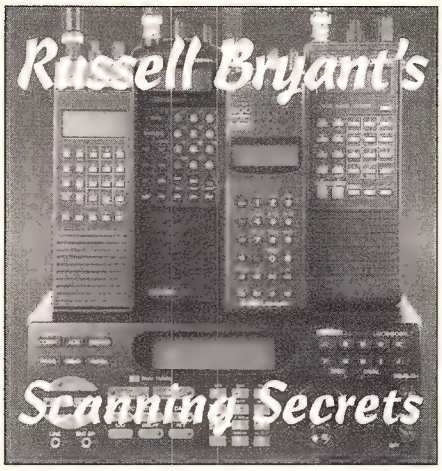
If you haven't upgraded to the current version of your Web browser yet, now is the time to do so. Tables and frames are slowly coming into the mainstream, and pages with such coding just won't display properly — if at all — in the version 1.x offerings by Netscape, Microsoft and other vendors.

***Netscape Navigator 3.0** and **Microsoft Internet Explorer 3.0** were both released last September, and version 4.0 beta products from both manufacturers are now available. The half-life of a browser version seems to be about three months at best. We recommend you upgrade to the latest browser of your choice. As always, do a backup of your system before installing the upgrade to ensure there will be no surprises should something fail to work properly.*

*Speaking of **RealAudio** in this month's column, the first beta of version 3.0 appeared on their Web pages last September. All the glitz is promised — better, faster, easier and stereo — including a claim of CD-quality audio on an ISDN line. The page to look at is http://www.prognet.com/hpproducts/ra3.0/index.html. The drawback? You must be running the 32-bit Windows 95 or Windows NT system on your PC.*

Seasons Greetings to you all. I've had fun compiling this column in 1996 and hope it has helped you in the enjoyment of the communications hobby. Thanks to all for your continued interest and support.

Share your favourite Web, FTP or Gopher radio or communications site with others. Drop me a note at trs@trsc.com, or click on any "mailto:" link at http://www.trsc.com.



This months topic: Frequency Files and Foreign Broadcasts

They are the very life that runs through the circuits of a scanner. Without them the scanner would be little more than a collection of resistors, capacitors and semiconductors confined to a plastic box. They are *frequencies*. Frequencies are the prized possession of everyone who owns and operates a scanner. This month I look at ways to obtain, store and retrieve frequencies.

Publish and be damned

In the past frequency guides were few and far between. Those that were available suffered from a common problem: their accuracy and attention to detail left a lot to be desired. Perhaps I should qualify that statement. Tools such as the CD-ROM and microfiche frequency data releases from the Spectrum Management Agency were unheard of.

Frequencies were obtained by sheer hard work and determination, not from simply searching through a guide or computer file. Those who dared to produce a frequency register did so from information that they and possibly their friends had acquired. With little or no chance to verify the facts and figures, they published and were often unfairly damned.

Today it is a different story. There are frequency guides to suit every taste, from general purpose books that cover all radio users to specific titles on aircraft, railways and marine communications, to mention but a few.

These guides should only be considered references (yes, even my own Railscan book!). In other words, don't treat them as gospel. Radio is dynamic, so a frequency guide is, as the name suggests, a guide, a snapshot in time designed to point the user in the right direction. Your own data base should be the ultimate reference. Following on from that is the task at hand, designing a storage and retrieval system that suits your needs and budget.

Using a frequency guide as a basis, examine the services contained therein, noting any frequencies that may be listed for, but not necessarily used in your area. Having compiled a comprehensive list, think about how you wish to store the list, as well as retrieve the information, either for modification or verification.

Keep them cards coming...

Note books are fine to start with, however after a few months or so they begin to show their age. You can white-out an entry only so many times before the page looks shabby. Card file indices are better when it comes to changing data. Remove the old and replace it with the new.

But who wants to write or type a card every time a small piece of information changes? As you can no doubt see, books and cards are not the best house-keeping devices for frequencies.

In today's technology-rich world, the only way to effectively organise your frequency files is on a computer. I am not talking Pentium 200 with 12-speed CD, 10 gigabytes of hard drive and super VGA monitor either. For around $300 you can purchase a 286/386 PC, frequently with suitable software still on board. Often these machines are in perfect working order; their only fault is that they are old technology. Just like wine, there are also computer snobs, people who must have the biggest and best that money can buy. This misguided prestige can be of benefit to the less well-heeled amongst us.

The only drawback with buying a second-hand PC is knowing its history. You don't know if someone has had their fingers in amongst the various cards tweaking and turning. Nevertheless, they are still a consideration.

Not everyone has $300 to spend on a computer, even a second-hand one. There is, however, a series of computer-based products that just about anyone can afford. Sure, they don't have a lot of memory, or even a hard drive in the true sense of the word, yet they will provide fast and reliable frequency retrieval at the press of a button.

They are **personal organisers**. These by-products of the microchip age are a boon to the scanner user, especially those who do a lot of travelling. After all, even the smallest of laptop computers can a burden when you need to travel light.

From as little as $60 for a basic unit up to around $1300 for an Apple Newton, the average scannist can load every bit (or should I say byte), of frequency data they have into one of these things. They are easy to use, support between 32k and 640k of memory, and can even be programmed from your main PC. I have used one for a few years now and wouldn't be without it. Once the data has been committed to memory, it can be deleted or amended as desired. While a number of personal organisers only allow three lines per user, a reasonable amount of material can still be retained, with a little judicious editing.

Irrespective of the method chosen, it is important to keep it as accurate as possible. Decide if callsigns and channels numbers will form a part of your frequency data base. Callsigns can assist in identifying an precise user, especially when that user is amongst a dozen or so on one of the many community repeaters dotted about the countryside. Now for something completely different.

Scanning the ethnic band...

I have received a letter from a Sydney enthusiast inquiring about the foreign music broadcasts heard on numerous 150 MHz allocations. "Who are they?" asks our confused reader.

The 150 MHz transmissions form part of the Multipoint Distribution Service, or MDS. The idea is that organisations or individuals wishing to subscribe to MDS contact a supplier within their local area. They pay an annual rental fee and are supplied with a special receiver which is usually hooked into the PA system of, say, a club or function room. Music, sport and current affairs programs are then 'piped' into the hall.

Very, very few broadcasts are in English, nevertheless, I particularly enjoy listening to Greek music. I find it relaxing and exhilarating at the same time. Other performances are in Lebanese, Vietnamese, Portuguese and Italian. Check them out in your area. The frequencies and users in the Sydney area are:

151.4250	Greek Radio Rentals
151.6000	MDS language not identified
151.6500	MDS Greek
151.7500	Radio Bayrak
151.7750	Hellenic Communications
151.8000	Austral Radio
151.8250	Australian Chinese Communications
151.8500	MDS language not identified
151.8875	Avaye Iran Radio
151.9500	Hellenic Communications (tx scrambled)
151.9750	Movie Bazaar
152.0750	MDS Vietnamese
152.1000	MDS language not identified
152.1500	Portuguese Radio
152.1750	Hellas Broadcasting Radio
152.2250	MDS Chinese
152.2375	Sydney Radio Italia
152.2500	MDS Japanese
152.2750	Khoudeir Lebanese Community Radio

MDS is not confined to just Sydney, it is available in just about every capital city in Australia. Frequencies listed above are a good place to start looking in your neighbourhood.

Mail call

What did he say?

First up is Owen in Newborough, Vic, who asks that R&C reviewers employ the KISS principle — Keep It Simple Stupid.

While he owns and uses a scanner, he doesn't necessarily understand the terminology associated.

Owen, I concede defeat. I am guilty of assuming everyone knows what we are talking about.

Your letter has prompted a future col-

umn, in which I will provide a glossary of scanning. NFM is narrow FM as used by two-way radio systems, as opposed to WFM or wide FM as used by TV audio carriers and FM broadcasters.

Travel and phones, Part 1

HWM from Sefton NSW asks if someone is using a digital cellphone to call an analogue cellphone, does the digital lose its privacy?

First up we all know that monitoring a cellphone conversation is illegal, and is *not* encouraged by myself or anyone at Radio and Communications magazine.

To reluctantly answer the question, yes, of course a digital phone could be monitored in the clear if it were being used to call an analogue phone. The unauthorised listener would have to be tuned to the analogue CMTS frequencies, however.

Travel and phones, Part 2

The second part of our reader's question is a legal one that deals with a person travelling to the United States, taking an Australian version scanner with him. Technically, the Electronic Communications Privacy Act, 1986 would be breached, because you are importing into the USA a scanner capable of receiving cellphone frequencies.

The Act provides heavy penalties including gaol for persons detected violating the law. Additionally, the laws of many American states prohibit the use of a scanner, irrespective of whether it is tuned to police frequencies or not being used in a motor vehicle. As much as I would like to take a scanner to America, I would be reluctant to do so...

Travel and phones, Part 3

Travelling to the United Kingdom presents a different set of rules. There are no restrictions that I am aware of, to the importation of scanners into Great Britain. The *use* thereof, however, is heavily controlled.

The law as it currently stands is something like this: an individual is permitted to listen to normal broadcasts from the BBC and independent broadcasters on medium, short and long wave bands, as well as the VHF or FM broadcast band. Amateur radio can also be monitored by non-amateurs.

The UK's Wireless Telegraphy Act prohibits the unauthorised interception of transmissions from the emergency services, commercial two-way users and mobile telephones. Persons detected in breach of the Act are subject to a fine of £1000 (pounds) or imprisonment for three months — or both.

As far as frequency information is concerned, five radio operators recently forfeited equipment and £10,000 simply for exchanging frequency information amongst themselves.

Having said that, I do have some frequency data for the US and UK that may be of use to you, so if you'd like some let me know. Oh, and if your scanner becomes lost or stolen in either country? Tough luck, pal.

PRO mods

Richard from Orange has a friend who is willing to modify his Realistic PRO32 to receive 800 MHz. Unless your friend plans to use divine intervention, it cannot be done. The circuitry to support 800 MHz is not present in the receiver. Sorry about that, chief.

It's time...

Is there a topic you would like to see discussed in Scanning Secrets? If so, drop me a line at Russell Bryant, PO Box 344, Springwood, NSW 2777

Calls to Newcastle

A new scanning guide has just been released focusing on the Newcastle/Hunter Valley area of NSW.

*The **Local Scanner and Information Guide** is more than number crunching; it supports chapters on scanners themselves, antennae, cables and additional information sources. A chapter on frequency detective work is also included.*

Frequency lists are incorporated in the guide, with a natural leaning to the Newcastle area. To call it just a frequency guide would do it an injustice. The Local Scanner and Information Guide is reference source for all things Novocastrian.

The Guide is available from Garry Luxton, PO Box 132, Waratah, NSW 2298. It will cost you $24 which includes postage within Australia. Cheques or money orders should be made payable to Garry. Bankcard, Mastercard and Visa card holders can telephone (049) 68 0259 and quote their details.

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AR5000 The New Ultimate Receiver

Join the AOR Revolution with high tech state of the art receivers. Never before has there been so much in such a small package. Hear naval submarines on 21.4KHz, push a button and copy GOES WX Satellite on 1691MHz.

Leading Edge Technology now affordable!

The answer to every receiver need. Prior to the AR5000, it took two, three or even four receivers to cover this range, plus the small size and low power demands make the AR5000 ideal for field use, remote control radio, and local & remote computer control Every circuit and component is state-of-the-art, surface mount technology. Low noise circuits and devices ensure wide dynamic range and great sensitivity

FEATURES

- Totally computer controllable.
- Local and remote control of all functions.
- 7 I.F.Band width filters.
- Triple conversion superhet.
- Multi-Receiving mode covers today's data and voice comm.
- High speed scan/search
- 1000 memory ch.-10 banks
- 2 antenna inputs computer/ front panel control.
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NEW
10KHz to 2.6GHz Professional Monitor

- Switchable attenuator for high RF environments.
- Power 13.8VDC at < 1AMP
- AC adaotor included.
- Small lightweight. (approx. 8.5"W x 3.5"H x 10" Deep)
- For spectrum display SDU500 compatible.

SPECIFICATIONS:

Freq. range 10KHz - 2600MHz
Receiving mode: FM, AM, LSB, USB, CW and Special.
I.F Bandwidth: 3KHz, 6KHz, 15KHz, 40KHz, 110KHz, 220KHz, and 0.5KHz (Opt.)
Triple Conversion: I.F. 622 2, 10.7, 0.455MHz
Freq. Stability: +/- 1ppm(0 to 50C)
Programable Step: 1Hz to 999.999KHz.
Search/Scan Speed: 50 steps/ sec.
Ant. Impedance: 50-Ohm, (N & BNC)
Power Supply: DC 12V, 240VAC adaptor.

AOR WINDOWS SEARCHLIGHT SOFTWARE !

The latest AOR software for IBM and compatible control of the AR3000A, using the computer's RS232 serial port. SEARCHLIGHT makes full use of the Graphical User Interface (GUI) and is a genuine Windows program. Uses MDI and CUA (Common User Access)

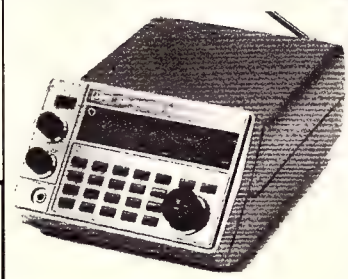
NEW Superior by design & performance AR7030

If you are serious about short wave listening, take a long hard look at the AR7030

New high dynamic range short wave receiver 0 - 32 MHz

The new AR7030 is the result of a combined project between AOR and internationally acclaimed UK designer John Thorpe. The AR7030 represents the very latest and best ever "JT" design concentrating on exceptional strong signal handling and bristling with enhanced features and facilities. The AR7030 is being manufactured by AOR MANUFACTURING LTD based at the new Belper location in Derbyshire UK.
Key features: Freq.* range 0-32MHz * USB, LSB, CW,AM, Synch.AM, NFM, DATA. reception. *IP3 greater than 35dBm. *110dB dynamic range. *TCXO freq. standard. *100 memory ch. *Pasband tuning+/-5KHz. *Var. bandwidth sync. det. * & many other features. Call for specs!

Colour brchure on demand! **$1995**



AR-3000A

Professional Communication Receiver and Wide Band Scanner from the famous AO

The "TOP" of all scanners is the famous AR-3000A. This multi-mode (NFM, WFM, AM, USB, LSB, and CW) radio covers freq. range from 100KHz to 2036 MHz. Four banks of 100 memory channels will retain mode, frequency, RF attenuator setting and lockout.

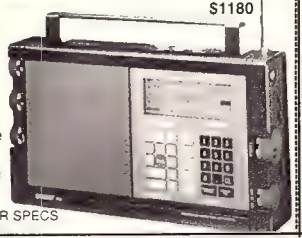
Ring for more specifications & BEST PRICE IN AUS

NEW GRUNDIG

Digital World receivers

SATELLITE 700
Thesound of the big wide world. FM, MW, LW &**SHORT WAVE**
$1180

The best of the Compacts is the
Yacht Boy 400
$399



World receiver with continuous shortwave range, ROM chart and RDS. The unique
Yacht Boy 500
$599 CONTACT US FOR SPECS

NEW AOR AR-8000

All Mode Wide-Band World Band Radio Receiver

A new breed of radio receiver which combines full PC compatibility with advanced wide band radio receiver technology Frequency coverage of 500 KHz to 1900 MHz cont. The all-mode reception - AM, USB, LSB, CW, NFM, WFM & independent 4.0 KHz SSB filter. 50Hz resolution is standard! **Ring for best price !**

NEW MVT-7200

100kHz to 1650MHz

All Mode Continuous Scanner
Christmas special **$775**

Yupiteru's latest model with new narrow band SSB filter. AM reception has also been improved by addition of a new narrower filter. An internal ferrite aerial for low frequency reception and a circuit revision has increasd battery life!

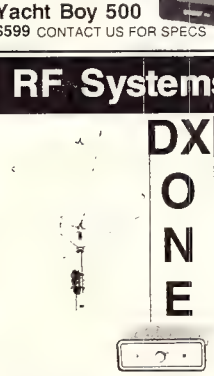
MVT-7200 is a much improved version of the old MVT-7100 series.

GPS systems

GARMIN GPS-38 $449

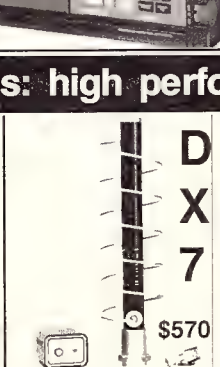
The **GARMIN GPS 38** is the navigational tool for the great outdoors that offers features in a small, lightweight package - all at a truly affordable price. Mark your favorite fishing spot, tree stand or camp site. Or retrace your steps back to the safety of your truck using all the new TrackBack feature. It shows you where you are, where you've been, and where you are going.

RF Systems: high performance accessories



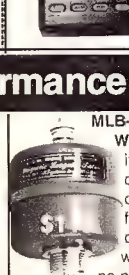
DX ONE

An active antenna for professional and commercial applications. Its military version has same specifications! This is a **"WORLD'S BEST"** **$950**



DX 7 **$570**

Active helical short-wave receiving antenna, designed to withstand the worst weather conditions. Its eliptical polarisation ensures a reduction in fading!

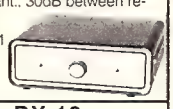


MLB-Magnetic Long Wire Balun makes it possible to use coaxial lead-in cable with all forms of longwire or other types of wire ant. There is no need for ant. tuner

AS IT IS IMPOSSIBLE TO GIVE ALL DETAILS ON ADVERTISED PRODUCTS, PLEASE CONTACT US FOR FURTHER "INFO"

SP-1 antenna splitter/combiner 30dB isolation, static protection

SP-2 the unique two way antenna splitter with medium wave suppression filter 40dB isolation between ant., 30dB between receivers.
SWR-1.1:1



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ACTIVE ANTENNA

DX-10 is a low cost high quality active antenna for long, medium and shortwave reception. The antenna is designed for indoor as well as outdoor use, including use on boats, ships, trucks and campers. **$430**

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LOWE *HF-225* $1550

LOWE ELECTRONICS presents two brilliant new receivers, with the awards:

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Only now have technology and engineering been combined in such an effective package.

FULL SPECS ON DEMAND!

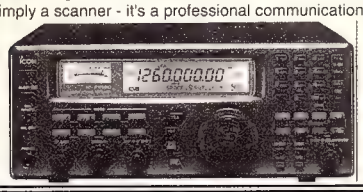
HF-150 $1150

NEW HF-250

The **Lowe HF250** is set to become the new world standard for mid-priced receivers. Building on from the world-wide success of **HF225** and **HF150** models, this exciting new model has many advanced facilities. Please call for specifications! **$2500**

ICOM IC-R8500

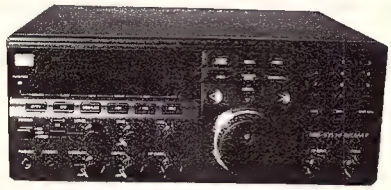
Icom technology brings you super wide band, all mode coverage from HF to 2 GHz, including shortwave and VHF/UHF, while maintaining a constant receive sensitivity. The IC-R8500 is not simply a scanner - it's a professional communications receiver.



ONLY $3380

JRC:NRD-535D

A touch of quality and class



Setting the industry standard once again for shortwave receivers, the **NRD-535D** is the most advanced HF communications receiver ever designed for the serious DXer and shortwave listener. Its unparalleled performance in all modes makes it the ultimate receiver for diversified monitoring applications. The **NRD-535D** is the recepient of the prestigious **World Radio TV Handbook Industry Award for "BEST COMMUNICATIONS RECEIVER"** **$3995**

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HF-1000

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WinRadio plus optional **World Station Database Manager** with over 300,000 radio transmitters from all over the world, total value $1094, is yours for only $699

What is WinRadio?

WinRadio integrates advanced radio receiver technology and the power of your PC, to create a stunning new concept in communications technology. Using the keyboard or a mouse, WinRadio can be operated exactly like a professional radio receiver, with controls and displays you would only find on high quality equipment. Comprehensive on-line help is always only a keystroke away.

Specifications

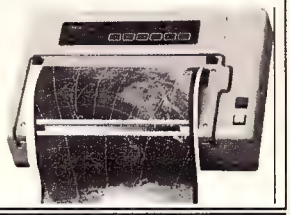
Receiver : PLL-synthesized, triple conversion superheterodyne.
Freq. Range: 0.5 MHz to 1.3 GHz. **Mode:** AM, FM-W, FM-N, SSB
Sensitivity: 1 uV (nominal) **Audio Output:** 0.2W, 8 ohm load
Tuning Resolution: 5Hz

RADIO FACSIMILE TERMINAL

FOR REMOTE IMAGE SENSING

AOR WX2000

The WX2000 is a stand alone radio facsimile terminal designed to produce hard copy images from various radio facsimile services, satellite pictures from NOAA, GOES, & METEOR WX2000 req only a shortwave receiver



World's most advanced COMM. TERMINAL M-8000

The **M-8000** is a unique code-converter that accepts multiple codes from a shortwave receiver and converts these codes into a display on a VGA video monitor, or into a hard copy printout on a printer. No computer or additional software is required. You can monitor numerous codes in **MARINE, COMMERCIAL, MILITARY AND PRESS SERVICES!** $2850

M-400 is another selfcontained decoder ideal for shortwave monitoring! All popular modes incl. ACARS & weather FAX can be decoded. Contact us for details! **$790**

Weather FAX in Colour AEA FAX III

Why wait for the weather reports? This package has a demodulator and software that gives you HF weather fax images. It also decodes CW, RTTY, and NAVTEX. All you need is a SSB receiver & PC **Only $249**

Air Trafic CONTROLLER ACARS

Join this fascinating NEW HOBBY - digitally monitoring the whole AIRCRAFT TRAFIC in a radius up to around 400 miles away. All you need is the ACARS package, a VHF receiver or scanner and a PC. HARWARE + SOFTWARE: **$245**

HOKA CODE-3

FINALLY - NOW AVAILABLE IN AUSTRALIA!
"The Standard Against Which All Future Decoders Will Be Compared"

Many radio amateurs and SWLs are puzzled! Just what are those strange signals you can hear but not identify on the Short Wave Bands? A few of them such as CW, RTTY, Packet and Amtor you'll know - but what about the many other signals?

There are some well known CW/RTTY Decoders but then there is CODE-3. It's up to you to make the choice, but it will be easy once you see CODE-3. CODE-3 has an exclusive auto-classification module that tells YOU what you are listening to AND automatically sets you up to start decoding. No other decoder can do this on ALL the modes listed below - and most more expensive decoders have no means of identifying ANY received signals! CODE-3 works on any IBM-compatible computer with MS-DOS with at least 640kb of RAM, and a CGA monitor. CODE-3 includes software, a complete audio to digital FSK converter with power supply, and RS-232 cable, ready to use.

CODE-3 is the most sophisticated decoder available for ANY amount of money, AND THE BEST NEWS OF ALL, IS THAT IT IS AVAILABLE IN AUSTRALIA FROM EMTRONICS!

$950

AOR: SDU5000

Spectrum Display Unit

Spectrum display units (SDU) used by government and commercial organisations to aid the location of elusive transmissions have not been within the reach of the average listener due to high price. Times have changed. New technology coupled to the innovation of AOR has reduced both size and price. SDU5000 is within the grasp of serious listeners. Usually when tuning, searching or scanning using a traditional receiver only one frequency is monitored at any instant. SDU5000 provides a visual display of activity not only on the frequency being monitored but up to 5 MHz above and below as well. This ensures that even a brief nearby transmission will be "captured" and nothing can escape undetected. The SDU5000 is effective at locating brief transmissions and even the front line of many military "hot spots" and exercises.

SDU5000 remains compact due to the use of internal 3.1" (79mm) HQM simple matrix 16 colour LCD 192 dot x 210 dot. An external home colour television with video input may also be connected (PAL or NTSC). SDU5000 may be used with a number of receivers which have a 10.7 MHz I.F. output. THE LATEST FIRMWARE will support AOR AR3000A and ICOM R7000, R7100 & R9000 and AOR5000. The receiver's RS232 remote port connects directly to the SDU5000 (ICOM CT17 or Siskin SMC communication interface is also required if using an ICOM receiver). A small modification is required to the AR3000A Receiver.

shoc RadioManager

Absolutely the latest in receiver control software - RADIOMANAGER makes your entry into databanks support for receiver control. There are over 37,000 utility and broadcast frequencies, automatic station ID, etc. Software allows monitoring all sorts of transmissions using JRC, AOR, RACAL, KENWOOD, YAESU, ICOM, R & S, TELEFUNKEN, WATKINS-JOHNSON, WAVECOM, UNIVERSAL, and AEA.
Contact us for complete specifications & price.

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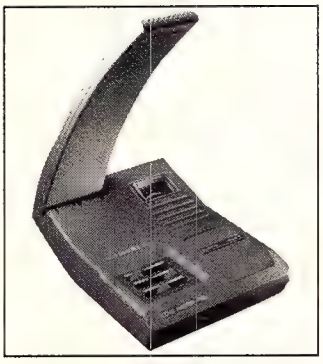

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Icom IC-T7A

A bright, scanner-like dual-band amateur HT...

By Chris Edmondson, VK3CE

Last month we told you about the new **Yaesu FT-50R**, a new dual-band hand-held transceiver which is more like a scanner with a transmitter built in. For just $599 we predicted big things for it. And now we look at the Icom equivalent of the FT-50R, the all-new **Icom IC-T7A**.

"All-new" it may be, and the T series is certainly new to Australia, but there have been several T models before this one, and they weren't all made by Ford. Icom's earlier T series radios didn't make it to Australia, though, so this one represents a newcomer in terms of the model line-up as well.

The IC-T7A looks closely related to the IC-Z1A, and it is. It's also a very similar size to the Yaesu, with a truly tiny NiCd battery pack which clips to the underside and back quarter of the radio. If you attach a larger pack the radio gets longer, not fatter like the Yaesu. Round One to the Icom already.

Frankly, it's going to be very hard not to make this a comparison review with the FT-50R. The two transceivers are so alike in specification and performance that it's not funny. Either Icom held a Yaesu in front of the mirror or Yaesu held an Icom there. And I am every bit as impressed with this newcomer as I was with the FT-50R. Whichever way you go, you'll be delighted, I promise you.

Where the Yaesu's antenna is on the top right with two knobs on the top left, the Icom does it the other way around. The Icom's BNC antenna connector is on the top left, with the volume and rotary encoder knobs to the left.

In between these are the two conventional connectors for a speaker / microphone. No whacky (and unique) single connector here! This, plus the expected BNC connector (rather than the Yaesu's oddball SMA), mark another clear win for the Icom.

Dimensions-wise, the Icom is about half an inch longer than the Yaesu and about a quarter of an inch less deep, but width-wise, they're virtually identical. On the weight front, though, the Icom is a clear winner at 309.5 grams on the electronic kitchen scale with its 4.8V 700mAh BP-171 battery in place. The Yaesu came in at 355 grams in similar trim (its FNB-40 battery is rated at 6V, 650mAh, though, for significantly more output power).

The Icom also has a substantially larger keypad than the Yaesu, which should make it easier to use for those of us with ten thumbs. The buttons have fewer functions than on the Yaesu, too. Most of them have only the two functions: key in a DTMF tone when transmitting, or to key in a new frequency when receiving. However, that means you make a far greater use of the SET mode or other dual- or multi-push button sequences in operation.

Although it looks something like the IC-Z1A, the IC-T7A is quite unlike that radio in that it offers operation on only one band at a time. That brings a substantial cost saving over the conventional two-bands-at-a-time approach, as there's only one receiver circuit for the entire coverage.

And coverage there is aplenty. Like the Yaesu, the IC-T7A has four bands, and you step between them by pushing the BAND button on the front panel. As usual, the Specifications panel gives nothing away, although the Australian model doesn't actually get a mention this time. Usually, Icom tells us that its Oz-spec VHF and UHF products cover only within the bands they can transmit on. The US-spec model, though, quotes 118 to 174MHz and 400 to 470MHz.

But our model gets just a smidgin more than that, at least in terms of what you can dial up.

The first 'band' tunes from 50 to 200MHz. It doesn't actually receive all that way, though. I dialled up 52.525MHz and transmitted a nice big signal. Although I ended up chatting to a station across town, the IC-T7A simply wasn't interested. It heard nothing whatever, even when sitting right beside the 6M radio...

The story was different on the aircraft band, though. The IC-T7A is remarkably sensitive, and its AM quality is quite excellent. The radio automatically selects AM above 108MHz (and hears the FM broadcast stations below this in a gruesome narrowband sort of way), and stays in AM until you hit 136MHz.

From 136 to 200MHz, FM is of course the mode, and reception appears quite good and sensitive right across that range. The radio can transmit from 144 to 148MHz.

By the way, for a really fast QSY, you press and hold the VFO button to switch to 1MHz steps. Press and hold the same button again and the radio then switches in 10MHz steps! That's great, and augments the direct dial-in frequency nature of the keyboard very well indeed.

The second 'band' runs from 300 to 400MHz. Again, the radio appears to receive signals across the entire range (mostly images from 90-odd MHz higher). The third band covers 400 to 600MHz, and transmits in the 10MHz chunk from 430 to 440MHz only (unlike the FT-50R, which transmits over 20MHz of the band).

The final 'band' tunes from 600 to 1000MHz without a break, and includes the commercial trunking and cellular telephone bands with embarrassing clarity. (Just as well I use a digital phone these days!) This radio, set up as it is in this country, could not be sold in the USA, as it's illegal to sell a radio which can tune the cellular phones there. Perhaps that's why the Oz model's spectacular frequency-hopping performance doesn't rate a mention in the IC-T7A's specs panel!

In any event, the complete tuning range is 750MHz. You'd take quite some time to cover all of *that* by turning the tuning knob in 5kHz steps! As I said, the radio does not receive signals all the way, but its coverage, sensitivity and selectivity is really very impressive nonetheless.

Okay, let's describe the rest of it then put it on the air...

....☞

*Here they are together. On the left is the **Icom IC-T7A** with the US-spec whip (the VK model has the smaller one used in JA and Europe). The slightly smaller **Yaesu FT-50** is shown on the right.*

The cook's tour...

If you haven't looked closely at a hand-held amateur transceiver in the past couple of years, you could be in for a surprise, as the Icom IC-T7A is both compact and feature-packed. It's not untidy at all, though.

We've already discussed the top panel, so let's look at the rest of it now. The left side is pretty easy to describe: its one single button is the PTT, right where you'd expect it. The supplied carry strap attaches to the right side, and there's a release button for the NiCd battery there plus a mini-DC connector for charging the battery. That copes with the sides!

You attach the supplied belt clip on the extruded back panel, which doubles as a heat sink. A little more than the lower bottom half is battery pack. And so to the front panel...

It's very functional, and it's easy to use and understand. The power switch (push and hold to turn on, push to turn off — take note, Yaesu!) is a recessed button right under the small LCD display. You couldn't accidentally turn this radio on if you tried! At the time of power-on the backlighting fires up briefly, and displays the present battery voltage. Excellent!

However, every time you touch a button — *any* button — the backlight comes on briefly. This can be a tad annoying if battery conservation is uppermost in your mind. You can kill the thing completely in the initial SET mode (a second SET mode accessed at power-up time), but then there's no way to turn it on at all. Oh well, that's only a small failing...

Under the power switch is the band button. Touch it momentarily to toggle between bands, or push and hold it to enter the scan mode. Under this is the HI/LO output power toggle. You hold this button to enter the SET mode. To its left is the TONE button, which applies a CTCSS tone. The CTCSS decoder is standard, by the way. You can select CTCSS decode, then hold the key to the right of the Ø to enter CTCSS scan. When a signal with a CTCSS tone running is detected, the radio will find the tone by itself. This is a very useful feature for folk who like to tune the commercial spectrum...

The TONE button also doubles as the duplex toggle. Push and hold the button to step between simplex and duplex plus or minus. Very simple...

None of the 1-Ø number keys have additional functions. They either enter a channel or frequency in receiver, or send a DTMF tone in transmit. Again, very simple and straightforward.

To the left of the display are two controls — a MONI button and a slide switch marked LOCK. The latter is self-explanatory; it locks all controls and falls easily to hand. The MONI button momentarily disables the squelch while you hold it, but if you press it twice, quickly in succession, it turns the mute off altogether. Save your ears (and the battery) — try it only in AM mode if the volume is wound up!

All of the remaining buttons — save the CALL button — have two functions, for things like selecting VFO or memory channels, 1 or 10MHz steps, the various memory functions, and DTMF dialler settings. The beauty here is the utter simplicity of the thing.

In fact, with such simplicity, I had initially thought that the SET mode would *have* to contain at least 50 entries, or sub-menus and all that. It doesn't. In fact, there are just five settings to look at, and you have covered the lot. Well thought out, Icom!

On the air...

Let's deal with the receiver first — sensible given that a radio like this is likely to spend a lot of its time listening...

I can think of many hand-held scanner users who would give their left whatnot for one of these things. While it doesn't have all the memory capacity (there are 70 of them) or twin 'turbocharged' search speed of many purpose-built scanners, the receiver impresses with surprising audio clarity and sensitivity, along with an unexpected pager resistance.

As well, with a high first IF of 45.15MHz, images are well down (better than 50dB) and more than 90MHz from the fundamental signal... I've encountered many scanners which fail dismally in this regard.

The mute is preset, and it takes until page 12 of the otherwise typically good Icom manual to find that you can vary the squelch level through four settings by pushing the mute button and turning the VFO knob. Makes sense, I suppose...

The IC-T7A has a small speaker — fair enough given the radio's very small size (as yet, no mainstream hand-held scanner is as small as this transceiver... but that is about to change. You'd better keep reading R&C!) — but the audio is clear and there's plenty of it, although there's not quite as high a sound pressure as Yaesu's FT-50R. That's no surprise; where the Icom's audio output is rated at 250mW, the Yaesu boasts 500mW!

I said earlier that the receiver seems reasonably unfussed by pagers in the two metre band. That's with the supplied antenna in place. Attach a high-gain external antenna at the base station and things can get a bit messy if you're in an area of high pager strength. Again, that's pretty much as expected.

What I did not expect, however, was the amount of hash the receiver copped whenever I came within a bull's roar of some computers, particularly on UHF frequencies.

In a side-by-side test, the Icom fared considerably worse than the Yaesu FT-50R. To investigate the phenomenon further, I employed a really scientific test: a visit to the local computer emporium! I wandered into the shop with a gaggle of HT radios (and yes, they thought I was completely nuts). I tuned to a busy UHF channel and wandered around the shop with the Icom and Yaesu in one hand, and a couple of 'control' radios in the other.

Not to put too fine a point on it, the Icom was pretty badly affected by the close proximity to all the electrical racket, while the Yaesu simply didn't notice it at all. You could generally still hear the signals on the Icom (sometimes not when the effect was particularly pronounced) but it was full of strange squeaks, bloops and buzzes all the time I stayed in the shop. The FT-50R absolutely creamed the IC-T7A in this regard. Weird science...

The cause of this evident distress could be a bit hard to overcome. It could, perhaps, have something to do with limiter characteristics, or close proximity wideband signals causing mixer overload, even poor or insufficient shielding allowing the noise to get into the IF strip or a gain stage. However, a more likely cause is magnetically-induced interference causing microphony in the radio. It simply didn't happen when I held the radio close to a high-quality monitor, only the cheaper ones. In other words, a susceptible component in the radio is probably having its properties affected when in the presence of a strong magnetic field — just like the ones you find near poorly-screened computer monitors.

Whatever the reason, we observed this phenomenon on not one but two IC-T7As and believe it to be inherent to the transceiver's

design. That's a real shame. However, now that it's been brought to Icom's attention I bet a minor fix is only a matter of a very short time away...

In other regards, though, the Icom equalled the Yaesu's magnificent receive performance. Fair enough, too; the specifications are pretty much line ball.

Finally, we actually used the radio to *talk* to someone...

The little microphone appears to be at the top right-hand corner of the speaker enclosure. In short, the transmit audio quality is very good indeed. Sibilants were well controlled, and the overall gain was quite high. For what it's worth, I rated the Icom's transmit audio as somewhat better than the FT-50R's, which was at a fairly low level unless you spoke very directly into the insert.

The actual *quantity* of transmitted signal was another matter entirely, however. Where the Yaesu is rated at five watts output on both bands (and delivers rather more than that), the Icom is rated at four watts output on two metres and three watts on 70cm given a 9.6 to 13.8 volt supply.

With the supplied battery, which is physically small and of a low voltage, you get an output power of only 1.2 watts on two metres and 1.0 watts on 70cm. While many would find that power adequate for chatting at the local club or hamfest, it may be inadequate for safe backup comms on a cross-country hike.

On my daily wanderings around Wonga Park I carry a transceiver (or two!). The Yaesu's extra output wick made the difference between a noisy but possible contact and no signal whatever from the Icom, both over a 15km two metre simplex path (through a couple of hills) and into a 70cm repeater some 25km away.

Of course, there's a range of larger batteries available and — unusually — you can choose to upgrade to one of them at the time of purchase and leave the standard battery in the shop. Or, of course, you can simply buy the extra packs.

The supplied item is the BP-171, a 4.8 volt 700mAh unit. A slightly larger capacity pack, the BP-172, costs $82, but the output power will remain the same as it is also 4.8 volts. Next step up the tree is the BP-180, a 7.2 volt 600mAh unit which doesn't yet appear on the Australian price list. It increases output power to 3 watts on two metres or 1.6 watts on 70cm. The final NiCd offering is the BP-173, a $160 offering 12mm (half an inch) longer than the supplied BP-171. With the BP-173 you get the maximum possible output of this radio: four watts on two metres or 2.8 to three watts on 70cm.

For those with a lifetime supply of AA alkaline cells or individual NiCd cells at home, a BP-170 battery case will set you back a reasonable $30 or so.

The options list also includes three hand speaker/microphone units (one of which has a number of programmable keys), a headset unit with built-in VOX, a brace of carry cases and mounting brackets.

Summary

The Icom IC-T7A is a very competent dual-band transceiver with a very appealing and simple-to-use operator interface.

The receiver tunes over a very wide range of frequencies, but it suffers somewhat in the presence of strong nearby interference. The transmitter sounds very nice, but would benefit from having more output power in standard trim for the extra money over the Yaesu FT-50R.

While it has a recommended retail price of $785, you're more likely to find one for around $700 in the stores.

Radio and Communications thanks **Daycom Communications** for the loan of the review transceiver.

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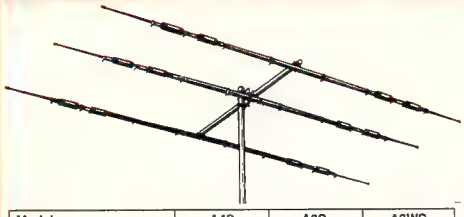

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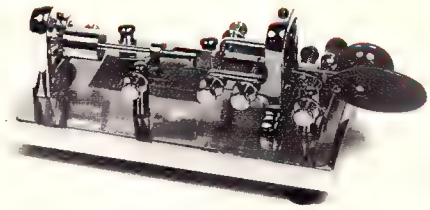

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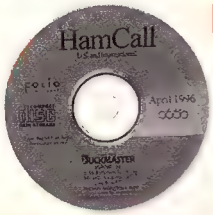

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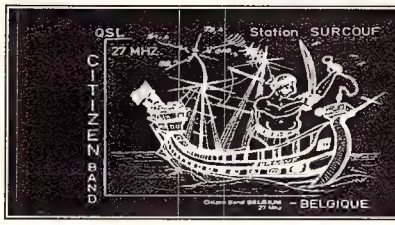

11m DX International

By Jack Haden, VK2GJH...
PO Box 299, Ryde, NSW 2112

Christmas is not too far away now, and already a few people are starting to pop up on the 11 metre band seeking DX and, although conditions have shown signs of improving, the diehards are still hanging on.

As the holiday season draws near more people will come onto the radio to chat or DX as free time will be now available. As mentioned in the ACBRO column a couple of issues or so back, the hobby of CB radio does appear to be, dying and it's now quite easy to find a clear channel in Sydney, even on the weekend!

If CB is on the way down — as some are saying (and by listening about I think there *is* truth in it) — then the effects will surely flow on to amateur radio. The amateur radio hobby ranks have grown significantly over the past two decades, mainly due to the CB radio craze, and without these people changing from CB to amateur radio the latter will stagnate too. As the saying goes, 'populate, or perish'!

Mike's in Africa now...

I was surprised to receive a letter from Mike, who most of us will remember as the TA-31 or 101-AT-102 from Madang in Papua New Guinea. He was very active a few years back. It was Mike who gave many a chance to confirm PNG on 11 metres, and I had many a long chat with him back then. Mike has written to me from Tanzania, in a district or village called Mwanza where he is now living. He wishes to advise all his old radio mates that his gear will be arriving by ship and by the time you read this he will be active on 11 metres. As usual, the callsign is the TA-31, and a QSL address will be forthcoming very soon.

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Alfa Charly DX Group...

A while back in this column I gave mention of the Dutch-based Alfa Charly DX club and some of the DXpedition activities it had scheduled. A letter from a Sydney member of the group, Laurie the 43-AC-144, came with a wealth of information on this club.

Laurie is a life member of this small club which has 300 members in Holland and a small number outside of Europe. The club was originally formed in the early 1980s, and was disbanded only to be resurrected again in 1993. A newsletter is published for members every three months and the group is also on the internet and can be found on E-mail at: prac052@worldaccess.nl.

Any people interested in this group may contact it via Mr Pieter, PO Box 2107, 5700-DA, Helmond, The Netherlands. Thanks again to Laurie the 43-AC-144 for sharing this information on this small club.

DXCC Countries List update...

It never fails to happen — as soon as the hard work was done compiling the 1996 11 metre band DXCC listings and it had gone off to press, along comes a blasted change or two! Usually the renowned Murphy's Law leaves me alone, touch wood, but not this time around.

Although it took it one helluva long time, Alfa Tango finally got off its backside and has issued Scarborough Reef and Pratas Island with numerical country prefixes being 335 and 336 respectively.

So get out your liquid paper and enter the two new ones on your list, which featured in the October issue, in case you missed it. Some European clubs tired of waiting for AT to take the lead gave out 335 and 336 to other new entries, some even gave the numbers to 'Claytons' DXCC IOTA islands. So when the bands finally do open don't be too surprised to hear a variety of 335 and 336 prefix versions about the traps!

There are many variations against 330 through to 341 prefix world-wide, as it depends on which club you belong to, although many generally follow the Alfa Tango allocations. It's a pity that the 11 metre DXCC is so sloppy and wayward compared to the amateur radio system and that AT has been ridiculously slow is keeping abreast with DXCC changes as they take place.

Suffix usage on 11 metres...

A letter from Kelvin Peterson in New Zealand asks why some DXpeditions sign with the 'DX' or 'Ø' suffix? For example; what would Kelvin sign as should he go to the Kermadec Islands, 263-AA/Ø or 263-AA/DX? So what is the difference, and is there a rule in place covering suffixes on DXpeditions?

Most international clubs follow a rule that the 'DX' suffix is used when stations are already located in the particular DXCC country concerned, hence you would sign with a 'Ø' (zero) if there were no resident stations active. In our case, you could go to Willis Island (which has no permanent inhabitants) and sign as 279-AA/Ø but should you go to Norfolk Island you would have to sign as 130-AA/DX as there are already stations active on CB there.

Keep in mind that this suffix system may not be adhered to by other radio clubs on 11 metres, but I know Alfa Tango does abide by it, possibly because it created this rule in the first place!

DXpedition news, views and gossip...

I wonder what has happened to the much-publicised **Cocos Keeling Islands** operation signing as 193-TR/DX in 1996? With the year only weeks away from being history, this activation is still being mentioned in Europe with 43-TR-191 as the DXpeditioner.

Stuart, if by chance you read this, how about dropping me a line

and solving the 193-TR/DX mystery? With propagation as poor as it's been, maybe the activation has been and gone and I missed hearing it, or possibly it was postponed due to poor conditions on 11 metres? Still it would be nice to know eh? I'd even refund the 45 cent stamp to Stuart to get the news on this one!

A wandering Dutchman was supposed to have activated both **Norfolk** and **Lord Howe Islands** in the period October 18-27 signing as 130-NR/Ø and 268-NR/Ø respectively, although I failed to hear either station. QSL via PO Box 904, Leiden 2300 AX, Holland.

Ceuta and Melilla, **South Africa** and **Scotland** may be still about 11 metres as you read this by way of 106-MU/Ø, 44-MU/Ø and 108-MU/Ø respectively. All operations should have ceased for the said three stations by November 29. The QSL route will be announced on air.

French Guyana and **Guadeloupe** will be active some time in the period November 5 through December 28 by way of 14-MRC-002 using his home call oblique 22 and 196 prefixes. The same person also plans to travel across the sea to Africa and become operational from Senegal and the Central African Republic in the dates given. QSL via PO Box 201, Lorient Cedex 56102, France.

West Malaysia is rumoured to be on air by way of a roving Italian signing as 1-AT-671/113, and should be about the band until December. Although the QSL route hasn't been clarified here, I've been told by my Italian correspondent that his callbook address should be reliable: PO Box 54, Gela 93012, Italy.

Norfolk Island will possibly come on air next February or March by way of Tommy, the 43-IR-001 from Sydney. Tommy has yet to announce further details, but it is expected he will sign as 130-IR/DX for the duration of his stay. The QSL route will be via; PO Box 191, Sans Souci, NSW 2219. Return postage essential.

Lord Howe Island may come on air around November 25 through December 20 by way of Duncan, the 43-DA-101 from rural Victoria. Duncan hopes to secure accommodation that will allow him to erect a five-element beam and final details are yet to be released. Should this be a success, Duncan hopes to activate Christmas Island in the Indian Ocean around mid-1997.

Sovereign Base Cyprus (also known these days as **Dkehlia and Akrotiri**), **Cyprus** proper, **Bhutan** and **Syria** are being scheduled for activation as 291-ST/DX, 110-ST/DX, 202-ST/DX and 181-ST/DX respectively at any time now. Solid information still remains unclear on this lot, but the QSL route has been given as PO Box 212, Napoli 80132, Italy. An American dollar is required when QSLing any of the mentioned operations.

Andorra will be about for the month of November by way of 30-DT-155 signing oblique 51 prefix. QSL via PO Box 196, Sant Boi, Barcelona 08830, Spain. Also be on the alert for 51-ZB-??, also rumoured to be active around now along with 11-IF-120/51 and 14-AT-566/51 active until the end of the year.

Tromelin (259) and **Rodriguez Islands** (257) may be activated by Peter, the 14-NAT-197 — who was last on air from Mauritius as 14-NAT-197/168 — if time permits. Information concerning these other activations remain rather cloudy, but should it come to fruition and conditions be ripe I know many in the Pacific who would like these two in the bag. QSL via his CBA with the usual trimmings.

QSL tales emerge...

I bumped into John, VK2DEJ at the local shopping mall the other day and he told an interesting story about two IRCs and a letter with a sample QSL card sent off to Mongolia. A few days after mailing, John received a letter from the Australia Post Northern Suburbs Mail Centre in Sydney.

It seems an honest soul had picked up John's letter and QSL card (minus the envelope) from the floor of the mail room and, showing some concern and courtesy, took the liberty of mailing it back to him.

The question is, how did the letter find its way out of an envelope sealed with adhesive tape? Did someone open it deliberately at the mail centre? The last question which remains unanswered is: what happened to the two IRCs which were placed with the letter?

In the past I have been quick to point out dishonesty in the mail systems of many third world and developing nations. Perhaps we should look at our own system first before condemning others! Not so long back, a Sydney postman was found to be cutting corners on his delivery runs by dumping mail... makes you wonder doesn't it?

IOTA and Special Event activities...

The Greek Islands always appear to be most popular on the IOTA circuit. Currently, **Evia Island** and **Peloponnese Island** are on the air until the end of the year signing as 18-GI/EI and 18-GI/PI respectively. Just recently the following Greek Islands were all activated for IOTA purposes: **Skopelos**, **Syros**, **Skiathos**, **Karpathos**, **Tinos**, **Santorini** and **Crofu** Island, just to name a few to hand.

Macedonia is about the band under the guise of a SES operation with the callsign of 18-SG/MA (not using a 332 prefix?) and will remain active until 2000 callsigns are scribbled into the logs. QSL via PO Box 50, Nigrita 62200, Macedonia, Greece. A greenstamp for QSLing is required.

Providencia Island, which is part of the San Andres Island configuration and counts as 81 prefix, will come on air for the IOTA chasers between November 8 and December 3, and will sign as 81-PAS-0/DX/IP (quite a mouthful, eh?) According to the 4-AT-185, the QSL route will be PO Box 1921, Oviedo 33080, Spain.

Maritime mobile activity around some exotic DX locations has been reported by way of the following operations: 76-CA-123/MM **Morocco**, 300-CA-123/MM **Western Sahara** (maybe it's a Ship of the Desert!), 114-RH/0-MM **Pakistan**, 151-RH/0-MM **Iraq** and finally 154-RH/0-MM **Iran**. Not much point in working this lot for DXCC credits, as maritime mobile *do not* count for acceptance in the DXCC criteria.

Asia and Oceania news...

At long last the band has showed some signs of life, with some excellent signals starting to filter through from the Asia/Pacific region, which is better than nothing at the present. Perhaps by the time you read this the band will have opened up further afield.

Asiatic Russia was coming in quite well by way of 302-UR-03 operated by Mikhail at 0100z. At the time Mikhail was a reasonable five by three peaking five report and worked a couple of the diehards here in Sydney. Mikhail lives in the city of Khabarovsk, which is close to the border with China. He uses old valve equipment to a wire antenna.

South Korea is a regular from south-east Asia, and at 0042z I noted Unit-100-Korea Station with Kim at the mic running a good five by four on the meter. At 0112z he was followed by Jun who signed as Radio-165 and was a good five by five.

Taiwan appeared around 0233z by way of Lim the 155-RC-105 from Taipei, and was drawing quite a bit of attention from starved Australian DXers as Lim was five by eight at the time.

Thailand was struggling to make it through the noise at 0455z by way of station calling as '153-Division' over and over on the call frequency before finally being answered by a station in the Philippines. The Thailand station was a poor four by one peaking two at the time.

As usual, a number of other regulars from our region were about the band. A chap in Brisbane says he had a brief opening to **New Zealand** the other week, so things are looking up.

Hawaii and **Japan** have been steadily increasing in signal strength and a fair signal from Alaska was heard the other day, so maybe some choice DX is just around the corner.

Is it yet time to spruce up the gear and blow the dust off the log books, stock up on greenstamps and IRCs? Maybe, let's just wait and see...

73 de Jack.

Jack Haden checks out the DX on 27MHz...

Online 1996

What a year it has been in the computer field! We have seen advances in speed department for motherboards, prices on hard drives have plummeted, memory has become affordable, and a lot of BBSs have collapsed in favour of the Internet. What will 1997 have in store for us, I wonder?

Optus vs Foxtel Internet war

Is the Cable TV Internet access going to kill off the small ISPs?

Well, there is no doubt it is going to have some impact, however the current publicity and hype surrounding the new way of accessing the Internet does appear to be a little flawed.

Currently the press is stating that you can get a 10 megabyte link to the Internet with incredible speeds. Well, to some degree this is correct, however what few realise is that, under the existing infrastructure, you have a 10 meg cable down your street, but you are sharing that cable with the whole street. A person watching their Pay TV service will consume a couple of meg of that cable, another watching a different channel will consume a couple more, so as you can see your super bandwidth has gone down quite a lot.

The idea of super-big caches where commonly-accessed web pages and ftp files are stored is a good way to save bandwidth, however it is not the answer to all the Internet's current problems.

Overseas bandwidth is still the major stumbling block for all of the big players. There is little point having a super quick link to the last point in the chain, if the whole system then bottlenecks waiting for a response from an overseas host. This occurs now even with the big players, and remains the most frustrating thing about using the net.

Unless the new kids on the block are going to invest mega-dollars and obtain their own super high speed links to overseas, in a real world you are not going to be a lot better off.

Sure, this new system will be most useful if all of your traffic is going to originate within Australia, and as such will be terrific for businesses with offices in other states, but with the high costs are Mr and Mrs Average Computer User going to be able to pay for it all?

Compared to the current schemes of accessing the Internet, even from the big guns, the prices are on the high side of being affordable.

Add to this the current lack of information regarding pricing and availability from both Optus and Foxtel, and I don't think this whole project is going to be as close as people are being led to believe it is. From what I have been able to find out, both newcomers are having technical delivery problems, and with 1997 being the deregulation of the communications industry, maybe some major input from overseas is what is going to bring all this to a head.

The small ISP is still going to play an important role amongst all of this; some have their own 'niche' markets that they service and this is the way to go, take a particular chunk of the market and service that part very well.

(He won't say it, so I will. Michael owns and operates the Internet Service Provider [ISP] TBSA, and does a very good job indeed looking after the radio buffs, with SWL and scanning very high on the list of priorities. I use it too... Ed.)

Using the exact same reasoning, that is why BBSs should remain around for a long time to come. Many of the 'niche' BBSs that are servicing the radio field are offering files and features that are just not available on the Internet, or if some of them are available they are not at a speed that an end user is going to tolerate.

To subscribe to a BBS, the fee can vary from as little as $10 per year to around $50 per year for full access. You can download your files in real time, file searches are a lot quicker and you can get some of the extra features such as online games, online database searches and more.

Screen capture utilities

Have you ever been running a program and thought "...I would just *love* a copy of this screen..."? Well, if you don't have a printer connected, there is still help at hand.

In the articles that I write for the magazine, there is a constant need to take a 'snapshot' of the screen and be able to provide that to our production crew for inclusion in the magazine. These files are typically created in either the professional 'TIF' format or the more common 'PCX' format.

I use two different programs, the first is a terrific little Windows-based utility called **GRABIT** and I run it under Windows 3.11 on my old 386 clunker machine. Operation couldn't be simpler — you fire it up under Windows and then 'minimise' the window. Then when you find a screen that you want to take a snapshot of, you simply press the PRINT SCREEN button on your keyboard and that transfers the file into the Windows Clipboard. From there you switch back to Grabit, and then paste the image onto your worksheet, and from there you can save the entire image as a PCX file. Yes it's that simple.

The other one I use a lot is a program called **TEXTSHOT** which is also a shareware program, but this one runs under a DOS environment. Textshot is what is known as a TSR, which stands for Terminate and Stay Resident.

This is a clever little utility that loads itself into your computer's memory, utilising only the minimum amount required to still allow it to run.

The principle of operation is essentially the same, where you just have to press the PRINT SCREEN button on your keyboard, and this opens up a little window at the top of your screen where you simply enter the name of the PCX file you wish to create, and Bingo! you have a complete screen capture.

These sorts of utilities are very handy for when you are logged onto your favourite BBS to take a screen dump without having to write down a heap of information.

Once you have stored the PCX file you can then even import it into a particular document you could be working on; Microsoft Word is a good example of how easy it is to do just that.

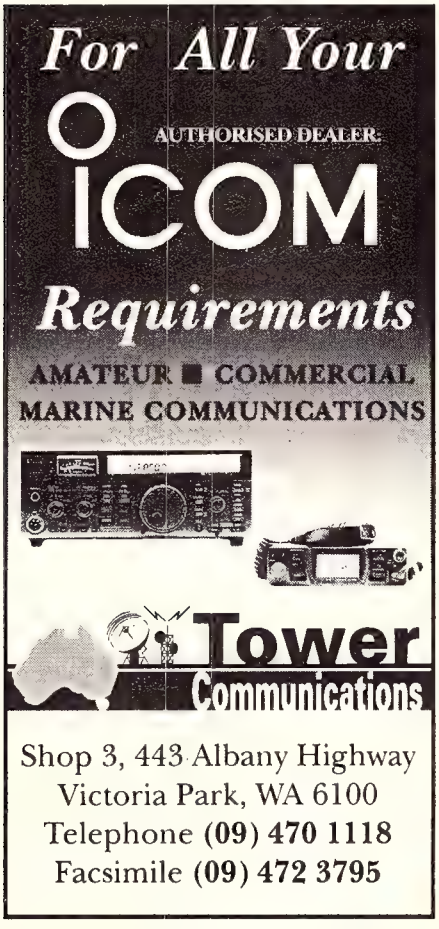
Both of these are shareware programs and you should be able to find them on just about any BBS around the country. These two programs definitely fall into the 'Oldie But A Goodie' basket.

aus.radio.scanner

The Australian specialist scanner group on the internet Usenet newsgroup scene is called **aus.radio.scanner**. It's been running for about four months now, and has seen a very good patronage from like-minded scanner and computer buffs from across Australia. If you are into the scanning scene and want to swap ideas, frequencies or just have a good chat, drop by and take a look.

Trunking Decoder Software

There has been a lot of talk amongst the BBS and Internet community about a piece of software that is supposed to help you decode trunking working in conjunction with your PC and your scanner. Obviously the scanner must be capable of being controlled by a computer in the first place...



By Michael Evans - email to michael@tbsa.com.au

The software has reportedly been written by a brilliant 17 year-old computer whiz kid who dabbles in scanning as well. The package is supposed to have been released as a 'Freeware' package in September 1996.

With that said, I have been unable to locate any such software, and it appears as though I am not the only one. There has been a lot said about it... no doubt it is possible and I trust that this has not been a less than funny hoax on all of us.

If you happen to have stumbled across this software on the net, please drop me a line and let me know where it can be found. Email to michael@tbsa.com.au

Speaking of trunking, one of the best sites I have found for information about trunking systems while surfing is at http://members.aol.com/wwhitby/trs.html

If you are interested in trunking this one is well worth a look.

The UK Scanner Scene

In the UK they have some rather specific rules about what you can and what you cannot listen to on your favourite receiver. It's very much unlike Australia, where we are able to listen to basically anything that does not cover 'Telephone Traffic'.

The UK restricts people from listening to Police and other emergency and security organisations, hence obtaining any information about them is rather difficult.

Along to the rescue comes UK Scanner News. They have a brilliant web site available at http://www.termcon.demon.co.uk/ukscan.html that has all of the information one could possibly ever want. So If you are heading over to the UK check out this site *before* you consider packing your scanner.

PD Software Registration

There has been some confusion as to how to register the software PD — Pocsag Decoder — here in Australia. You can register the software for A$55 with Talkback Systems Australia, PO Box 8054, Northland Centre, Vic 3072. For more details you can look at the web page http://www.tbsa.com.au/pd.html or email pdrego@tbsa.com.au

On the subject of PD, the author Peter Baston is still working on the Windows-compatible version which will hopefully be available very soon. As soon as it is released, I shall let you all know about this extremely popular program.

While speaking of new releases, his latest offering is PD-203.zip which you should find on your favourite radio BBS or you can ftp it direct from the author's host site ftp.demon.co.uk/ pub/ham/scanners/pd-203.zip.

In Australia take a look for the file on these radio orientated BBSs:

Short Wave Possums BBS	(02) 9651 3055
Satcom Australia BBS	(02) 9905 0849
Radio Shack	(03) 9532 5737

The new version has had the Shareware timeout increased to 15 minutes before it shuts down. This makes it easier to evaluate it for your needs, and there is now a configurable setting that allows you to use a Hamcomm decoder or the new OptoElectronics Optolinx interface with the software. Take a look.

Well that's it for this issue folks. Thank you for your company once again and I look forward to bringing you more news and information next month.

SPEAKING OF THE INTERNET... (which we weren't but that doesn't matter!)

There are a number of larger BBSs that are now also providing gateways into the Internet via the BBS, and some are even doing it back the other way. This is providing a cost-effective way for people to explore certain aspects of the net without having to necessarily pay the costs involved.

There are BBSs popping up that can offer the luxuries of Email, Telnet, FTP and some Web browsing, so keep a look out for those in your travels as they could be worth a look.

One of the most common questions I received from 'Newbies' to the Internet is 'What Can I Look At?'

With that in mind, keep this list of World Wide Web sites handy next time you get a chance to 'Surf the Net' — and, of course, there are also the many sites visited by Tom Sundstrom in his monthly 'Baudwalking' column and summarised each six months or so (including one in this issue).

http://www.access.digex.net/~eeb/eeb.html	EEB Electronics (Dealer)
http://www.demon.co.uk/javiation	Javiation (Dealer) UK
http://www.pics.com/gilfer/	Gilfer Shortwave (Dealer)
http://www.iglou.com/copper/	Copper Electronics (Dealer)
http://www.grove.net	Grove Enterprises (Dealer)
http://www.pacifier.com/~ussn/	US Scanner News (Magazine)
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http://www.radioinc.com/	Radio City (Dealer)
http://www.sound.net/~ne/	National Electronics (Dealer)
http://www.tucker.com/	Tucker Electronics (Dealer)
http://www.scannerworld.com/	Scanner World (Dealer)
http://www.demon.co.uk/lowe/index.html	Lowe Electronics (OEM) UK
http://www.perconcorp.com	PERCON FCC Databases (OEM)
http://cutter.sincom.com/~scanware/index.html	ScanWare FCC Database (OEM)
http://www.kenwood.net/	Kenwood (OEM)
http://www.yaesu.com/	Yaesu (OEM)
http://www.alinco.com/	Alinco (OEM)
http://www.mot.com/	Motorola (OEM)
http://www.uniden.com/	Uniden (OEM)
http://www.aorja.com/index.html	AOR Japan (OEM)
http://www2.kiss.com.au/winradio/	WinRadio home page (OEM)
http://www.panix.com/clay/scanning/	N2VKG Scanning Reference
http://www.zianet.com/kc5kto/scanner.html	Mods, Computer control and more
http://itre.ncsu.edu/radio/faqs/parnass.faq.html	General Scanning FAQ
http://itre.ncsu.edu/radio/faqs/clubs.faq.html	Scanner Clubs
http://www.cpl.uiuc.edu/~tpeckish/appendix.html	AR8000 Receiver Info
http://www.uark.edu/~plaws/scan/	Peter Laws Scanning page
http://www.u-net.com/~morfis/acarstec.htm	ACARS Information
http://www.cc.gatech.edu/db1/fly/airport-info.html	Aviation Freqs
http://www.mcc.ac.uk/OtherPages/AmateurRadio.html	Amateur Radio

If you have previously visited some of these sites, check them carefully again; the internet is a constantly changing entity with people moving around their web addresses as often as they change their socks, so to speak.

You will find many of these sites have a lot of other useful links to other sites again, and a few have links to FTP sites so you can download the latest and greatest in radio software. Drop by when you get a chance.

Michael Evans looks at what communications-type software is available on the Bulletin Boards...

HERE and THERE IN AMATEUR RADIO...

Here and There recently received a letter from Mark, VK2KMO/CR666, who wrote in response to October's column. Mark had added his views of today's amateur radio scene to his R&C survey return, suggesting that the magazine needs to show a bit more balance in the types of article published. The October column was our response.

Mark writes, "...Your article tries to explain why a person should become an amateur. But we are not attracting new people and many operators are inactive. Obviously attempts to reverse this trend by the hobby's nominal leaders, the WIA [Wireless Institute of Australia], clubs and press have not been successful.

"Currently all effort seems directed to developing ever more expensive and esoteric modes to titillate a dwindling core of enthusiasts. This approach must surely fail. It is time the manufacturers and the hobby's leaders turned around and put some thought and effort into the newcomer and to those to whom a simple SSB or CW contact is enough.

"It is also time the R&C reviewers gave some thought to what features the average amateur really needs and the true cost to the hobby of not realising that, for many, adequate is good enough. Do reviewers all drive Rolls Royces or do they manage to get from A to B in something less pretentious?"

Here and There has visited this issue many times over the years. It is not a new problem — but computers, the Internet, world-wide communication and a society permeated with technology are factors making the decline of amateur radio more rapid.

As Mark says, "...The amateur or CBer's noisy, unreliable contacts are, to the general public, very much ho-hum." True, very true. Why struggle with atmospheric variations and unpredictable radio communication paths when Internet telephones make the process so much easier? Why trust your messages to a rather messy amateur packet radio system when electronic mail facilities are now so commonplace?

"To the beginner," Mark continues, "the amount of equipment, expertise and cost must seem awesome. Without encouragement, advice, help and access to low-cost equipment, the task must seem near impossible. ... It is hard for newcomers to catch up and getting harder. It is also a bit foolish to hold out these costly and complex activities as enticements to novices when many are struggling to just get on air with simple voice capability."

Couldn't agree more, Mark. The *Here and There* shack has always been modest — no beam, no linear amplifier, just 100W and a dipole or trap vertical (and certainly no Rolls Royce in the driveway!). The focus of this column has always reflected the simple approach to amateur radio, but it is increasingly frustrating to be missed (or ignored?) on the bands because so many amateurs only reply if the signal is 5 by 9.

We have reviewed the simplest rigs in this column but they are often hard to find. There are some kits available and these can represent a modest entry to the hobby. Perhaps a supplier or two might send some samples to the *Here and There* shack and we can feature them in the column...

For some years, the conventional view has been that amateur radio is not recruiting new members because they are drawn to computers instead. The focus of enticing new members, therefore, has been to link amateur radio with computers, to provide a clear path into the hobby. As Mark suggests, this is clearly not working. For Mark and many others, a focus on digital modes and computers is not amateur radio anyway.

Why struggle with unpredictable radio communication paths when Internet telephones make the process so much easier?

How about this suggestion, then? Why not market amateur radio as 'a worthwhile challenge'? There are two aspects to this notion. The first is that amateur radio can provide challenges in many ways — construction of equipment, communicating with a wide range of countries, collecting awards (see below), joining the WICEN emergency network, getting involved in contests and so on. It is quite easy to spread the word about the diverse activities that make up amateur radio.

The second point is much harder to get across. Active amateurs know that taking on the challenges produces something worthwhile, something we value and find satisfying. But we need to convince prospective amateurs that this is the case. Amateur radio has to offer something unique, some return that cannot be gained in any other way. Without this, we have nothing to offer.

Please let *Here and There* know what *you* think are the unique aspects of amateur radio. Think carefully about what led you into the hobby. Translate your experience to today's technological world and try to find the side of amateur radio that keeps us interested and involved. Let's see if we can pin down the unique nature of amateur radio and determine what makes it worthwhile for us.

Sorry, there are no prizes for the best response, but if we can distil the essence of amateur radio, we will be doing our bit to keep the hobby growing.

Amateur radio awards

One challenging area of amateur radio is the pursuit of a wide range of awards which recognise levels of achievement in the hobby. To receive an award, a certain number of contacts must be made by amateur radio and confirmed by exchange of QSL cards. Each award has its own set of rules about which bands, modes and so on may be used.

Awards are not everyone's cup of tea, so to speak, but they do represent a possible focus of activity in amateur radio. The rewards can be very worthwhile, too; a sense of achievement, satisfaction at doing a job well and so on.

As the introduction to the Awards Program in the WIA Call Book says, "Awards are an important and exciting part of the activity of amateur radio, and the spirit of competition and achievement in earning awards has helped the leisure time activity of amateur radio grow into the marvellous hobby/sport it is today."

Here is a summary of several Australian awards which fall within the WIA Awards Program, which is open to all radio amateurs. Further details can be found in the latest Call Book. This is by no means meant to be a definitive list; if any readers know of other awards, please send details and we will include them in a later column.

WIA DXCC Award

To receive this award, an amateur must provide evidence of working 100 countries. A list of eligible countries is published regularly, as some countries disappear and new one appear. The American Radio Relay League (ARRL) list is the starting point for the DXCC award, although the WIA may vary the list if it chooses. The award may carry endorsements for particular modes used.

Once the first 100 countries have been worked, an amateur can go on

adding further countries, initially in increments of 25 up to 200, then in 10s up to 300. Beyond that, individual additions are processed as required and a DXCC ladder is published regularly.

Worked All VK Call Areas Award

This award is often known as WAVKA. An Australian amateur must provide evidence of 73 contacts as follows:
VKØ: three contacts from at least two different areas;
VK1: three contacts on at least two different bands;
VK2, 3, 4, 5, 6 and 7: 10 contacts from each area on at least three different bands;
VK8: three contacts on at least two different bands;
VK9: four contacts from at least three different areas.

Amateurs outside Australia can gain this award but with separate requirements. Short-wave listeners can gain the Heard All VK Call Areas award.

Worked All VK Call Areas (VHF) Award

For this award, an amateur must make 22 contacts as follows:
VKØ, 1: one contact each;
VK2, 3, 4, 5, 6, and 7: three contacts from each;
VK8, 9: one contact each.

If the amateur moves more than 240 km from their original location, a new application is needed.

Worked All States (VHF) Award

For this award, one contact on the VHF bands (50 MHz and above) is required with each state and territory, ie VK1 to VK8.

Australian VHF Century Club Award

The amateur needs to be able to confirm contacts on the VHF bands with 100 different stations, at least 70 of which must be Australian. Separate awards are available for each VHF and UHF band. The 'change of location' rule applies to this award.

WIA Antarctic Award

Ten confirmed contacts are required with amateur stations conducting valid operations from Antarctica. The stations must represent at least six different government authorities and at least one must be VKØ.

WIA Grid Square Award

Contacts must be made using "Maidenhead" grid square locators, designated using two letters and two numbers. The minimum requirements are:
HF bands: 100 contacts
50 MHz band: 50 contacts
144 MHz band: 30 contacts
432 MHz band: 25 contacts
1296 MHz band: 10 contacts
13 cm and above: 5 contacts.

Mobile operation is encouraged to allow operators to work from 100 different locators. Cross-band, repeater, satellite or other relay methods are not permitted.

That gives a general view of the kinds of rules that apply to awards. Let me emphasise again that these are the awards which fall within the WIA Awards Program. Amateur radio clubs often run their own awards scheme and other aspects of the hobby attract awards, too. Here and There would very much like to hear about *your* awards scheme.

73s for this month from Paul, VK3DBP, and we'll see you again next year.

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vk3ce@tbsa.com.au

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Dear Sir,

I have owned and operated a UHF CB radio for nearly 12 months. During that time I have made many friends, come across many useful contacts and had hours and hours of fun.

The very great majority of people I speak to are on the air on a daily basis, and the CB is usually full of chatter. There are the idiots, of course, but they mostly confine themselves to their own channel. In my case, that's ADL03 repeater. They do annoy the rest of us, but if you ignore them they generally go away.

I am very interested in sideband, but my financial situation prevents me from purchasing one.

Although I'm very new to this game, and have only a very basic knowledge of electronics, I thoroughly enjoy your magazine. Every month I learn something new. A friend of mine, who is in the **Aussie Radio Club**, gave me a pile of old **Amateur Radio Action** magazines circa 1983, and I have found them fascinating. There is so much more to this hobby than I ever dreamed of.

I can't suggest anything to write about re CB use, as I am so new to this I don't know what questions to ask (although there's a few at the end). Anyway, keep up the good work, you are a great magazine.

Here are some questions:

1 Why can I sometimes get people 200 km away, and the next day can hardly reach my local repeater?

2 What weather conditions facilitate UHF radio transmissions?

3 What avenues are available for me to boost my 'transception' (cheaply)?

4 What is a linear amplifier, and how does it work? And a balun...?

5 Can you recommend any cheap (or library) books to help me enlarge my knowledge of radio and antennas, and how they work?

6 I've never seen any 'mods' for my modest FM-620. Can 320 mods work on a 620?

7 In what respects is the newest Uniden better than the UH-099?

8 Is there any discernible difference in the quality of tx/rx in the higher-priced units — or do you just pay for extra gadgets that I, personally, would probably never use?

9 With cheap labour, miniaturisation and mass production, why do radios cost so much?

10 Are there any magazines out there that cater to my level of knowledge?

I realise that these questions may be simplistic to you, but I'm just giving you an idea of what my requirements are, and perhaps what you could include in your magazine for readers like me.

PS. If you began a "ring us for info" service, I would definitely use it. If you did, it would probably give you a great insight into the problems etc of your readers. (Just a suggestion...)

S J Baker,
Hackham West, SA

Gee, thanks SJ. Just what I need at the start of the day. Before I answer your questions, though, I'd better tell you that if we had a "ring us for info" service, you wouldn't be reading the magazine any more. There wouldn't be any time to put it together! We spend enough time on the phone as it is...

Thank you for your interesting letter and probing questions. To answer some of the questions fully would involve a lot of technical stuff and a lot more room than we have available for Feedback, so I'll give you some brief answers and point you in the right directions where I can. I've shrunk the type size to fit as much as possible in, but any smaller and we'd need to supply a magnifying glass with each copy!

***Q1** is one of the really technical ones. We could talk about how the ionosphere works for HF, and what leads to ducting for UHF. But we simply cannot in this forum. We ran a theory course for prospective novice amateur radio operators over a course of a couple of years in Amateur Radio Action, and had just scratched the surface of some topics by the end of it!*

Instead, I'd suggest a visit to your local library for a look at the ARRL Handbook, which would be an ideal springboard to a whole world of further knowledge. But I warn you: once you start along this path there is no turning back! You'll be an eager and enthusiastic amateur before you can say WIA... The simplistic answer to the question, though, is that weather conditions and the number of sun spots both affect the way radio signals propagate around the world.

***Q2** UHF signals do not bounce off the layers of the ionosphere as HF signals often (but not always) can. There is generally very little difference between UHF propagation from day to night. A temperature inversion, however — a phenomenon induced by changing weather conditions, and more likely at this time of year — could provide a 'duct' for your UHF transmissions, which could continue for not just hundreds, but thousands of kilometres. Keen amateur VHF and UHF DXers look to the weather map for indications of upcoming DX! Again, a topic for the library books.*

***Q3** Antennas. It's the only legal way — and the only sensible, cost-effective way to improve the range over which your CB signals can be heard. There are great advantages in improving your antenna installation: no hot and costly power-hungry devices; and what you improve in transmitted output is mirrored in the receiver — you will also receive signals from much further away. Make sure you antenna is high and in the clear. Use high-quality, low-loss 50Ω coaxial cable of the shortest length practicable. If you can possibly afford it, don't use the skinny RF-58 cable at home for UHF; it's far too lossy. I'd consider RG-213 only if the overall length is short. 9913 or 10DFB is the best way to go... but sorry, it is far from cheap.*

***Q4** An amplifier for a radio transmitter is a device which increases the output power. A balun is a 'balanced-to-unbalanced' transformer usually used at the top of a dipole or similar. A linear amplifier can be used on SSB; it need not be linear for operation on FM. There are a few 'buts', though. To start with (and forgetting the illegality of using an amp on CB for a moment) for an amplifier to be worthwhile it needs to be a **big** one. Let's say you double your power to 10 watts. If anybody noticed it I'd be very surprised indeed. Double it again, then, to 20 watts. Some very few stations right at the very extreme of your range may notice a slight reduction in the noise on your signal. Frankly, it probably wouldn't be a worthwhile exercise until you had increased your power to 80 or 100 watts — and that is an expensive exercise indeed at UHF.*

Okay, let's say you've upped your power to 100 watts. More people may hear you — but hang on, can you hear their replies? Nope. Unless you have also built a receiver preamplifier you have completely wasted your money. For UHF, you'd need a GaAsFET in the front end for good noise characteristics. (That's a gallium arsenide field effect transistor, by the way.)

But who's kidding whom here? Why dabble with expensive and illegal gadgets when you can get a far greater improvement at the first stage by improving your antenna! Just putting low-loss coax up the mast will make a huge difference at UHF. Building a directional Yagi beam with, say, 12dB gain (easy at UHF!) and feeding it with quality cable will not only provide a better result, but it will be directional, won't cost a cent to run, and won't break any rules. Or try an omnidirectional colinear with as much gain as you can get. (The higher the gain figure in dB, the better it should be, but if you live at the bottom of a valley you may not see as great an improvement, as the angle of radiation will be far lower than, say, a humble ground plane.)

And, after all that, if antennas improve your transmitted signal by 12dB they do the same thing to your receiver! The simple rule with decibels is that if you double your effective radiated power you boost it by 3dB. 6dB represents one S-point, but I'm yet to see a properly-calibrated S-meter on any commercial transceiver.

The final concern with amps, by the way, is that you run a very real risk of causing a lot of unintentional interference which people will complain about.

Do yourself a favour, SJ — fix the antenna and forget the amplifier!

***Q5** There are many really good books, and we present reviews of them here from time to time. Try the books from the ARRL and RSGB... but don't overlook the Novice Notes and similar inexpensive Australian references that you'll find at your local Dick Smith store. These are an excellent way to get started!*

***Q6** Mods... firstly, these too are illegal on CB. A radio is type-approved for use on the CB service in the form in which you buy it. Apart from that, if upping the power to 20 watts makes virtually no difference at the other end, 'tweaking' it for 6 instead of 5 watts certainly won't! It may burn your radio out, though... And no, an FM-620 is not the same inside as an FM-320, so don't try anything silly. You may wind up with no radio at all!*

***Q7** A big question, this. Better read this month's Uniden UH-100 review on page 9.*

***Q8** On the CB front as with most other areas, yes, there is a worthwhile difference. More expensive receivers are far better, with the ability to clearly hear signals which may be mushy or won't even break the squelch on really cheap radios. The transmitted audio will generally be far better, too.*

***Q9** Don't forget the development work which goes into any new radio. That can cost quite a bit. Advertising a new product costs money, too (some car companies pay up to $500 per car to advertise them!), and labour is a very big component in the cost of a product, even if it's made in a third world country. Then there's the cost of building the plant there, then freight and import duty and warehousing and dealer margins and everything else! Actually, I reckon we get a pretty good deal...*

***Q10** You're reading it! (Could I say anything else?!)*

Good luck — and I really would suggest that you're an ideal candidate for amateur radio. I haven't been to Adelaide for a few years, so I don't know the current state of play with the radio clubs over there, but a good first point to start with would be the local branch of the Wireless Institute of Australia. It's at 34 West Thebarton Road, Thebarton 5031. The phone number is (08) 8352 3428, fax (08) 8264 0463. You can even call 'em up on the Net — http://www.vk5wia.ampr.org/

Don't forget the ACBRO clubs either. They cater to CB enthusiasts exclusively. See page 86/87 for the list.

Slow Scan TV — is it for me?

Part 1

By Jim Smith, VK9NS

Slow-scan TV has been around for years, but it is now undergoing a renewed interest in many quarters. You can send clear images right around the world on this fascinating mode!

I have recently renewed my interest in Slow Scan TV. This interest started on first coming to Norfolk in 1980. The photograph proves that my cat also likes SSTV. When she gets on top of the computer monitor it is time discourage her, remembering all that high-level energy floating around.

Is SSTV for you, too? Read on to find out!

The early days

The radio amateur has made a mark on many forms of communications — for example, pioneering SSB long before there was any commercial interest in the mode.

In the case of Slow Scan TV (SSTV), a few radio amateurs back in 1958 persevered with the idea of transmitting and receiving pictures by means of radio. Of course, in our homes, normal fast-scan TV does this very well, with steady improvement in technology giving us moving pictures in real time and high-quality colour. However, each TV channel occupies several MHz of radio spectrum space, which rules it completely out for HF, and makes fast-scan TV as pretty local phenomenon.

The story of SSTV is different, as our amateur bands are relatively narrow being measured in kHz rather than MHz. The original concept of SSTV visualised the transmission and reception of a black and white, still image within the normal pass band of a 3kHz SSB signal. It required all the ingenuity that those early enthusiasts could muster.

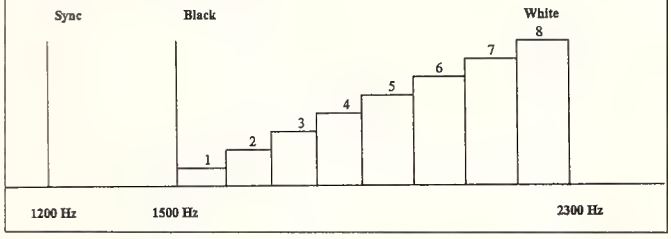
Limitation of bandwidth required a large compromise in the amount of information being dealt with. By restricting the number of lines of picture information, slowing Horizontal and Vertical rates and by using only black and white, the initial SSTV concept became viable.

Those slower scan rates were possible by using a long persistence P7 phosphor CRT Display tube. Thus if the picture was drawn line by line within a period of about eight seconds the total SSTV image was still intact on the screen as the last line ended. In those early days, many years ago, basic standards were derived for the SSTV picture as shown below in **Table 1**.

SSTV audio spectrum

The sub-carrier frequency which carries the sync pulse information is 1200 Hz and, since black level is 1500 Hz, it follows that the pulses are 'blacker than black' and cannot be seen. It can be seen from **Figure 1** that all the SSTV Picture tones lie within the bandwidth of an SSB signal. Since all information is within the audio range it is easily processed, stored and handled.

Figure 1
SSTV audio spectrum



Picture generation

In the early days a flying spot scanner was the usual means of generating an image ready for transmission. The first cameras used vidicons or plumbicons which were sometimes available ex-commercial TV camera equipment.

Digital scan converters

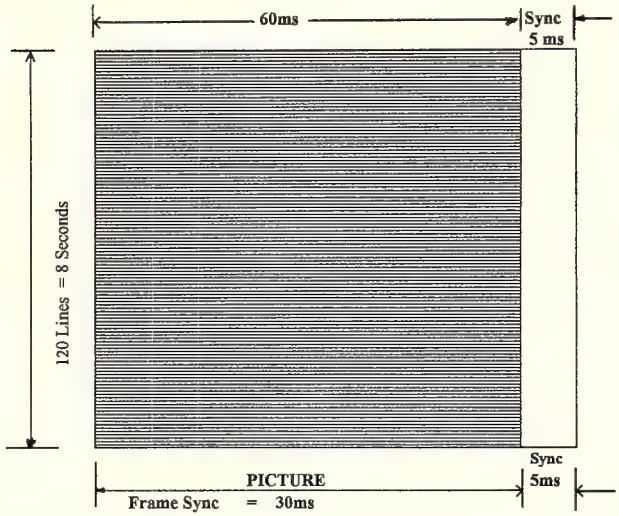
A major change was made possible by the use of Digital Scan Conversion techniques. Analog slow scan tones were converted to a digital form using parallel A/D converters. This digital data was readily stored in a memory bank using 65K of RAM (four 16K 4116 chips).

These were very expensive and a far cry from the inexpensive megabyte RAM chips of today. The digital data for one picture frame could then be read out, converted to an analogue form suitable to drive a fast scan monitor (eg a black and white TV set). In short, the slow ....☞

Table 1 SSTV parameters

Bandwidth:	Bandwidth under 3kHz, making the SSTV signal compatible with existing SSB standards.
Format:	The picture would be Black and White, having a square format (an aspect ratio of 1:1).
Scanning:	Horizontal and Vertical scanning rates were linked to the 60 Hz of the US power system. (Changes were needed for 50 Hz countries like Australia.)
Vertical Scan:	The number of lines was set at 120 per frame. The total frame time was set at eight seconds (which was the length of time the energised P7 phosphor stayed aglow.)
Horizontal Scan:	Left to right, and the definition was set at 128 pixels. Horizontal scan rate for 50Hz countries was 16 2/3 Hz (50/3)
Horizontal Sync Pulse:	5 milliseconds.
Vertical Sync Pulse:	30 milliseconds.
Sub-Carrier Frequency:	1200 Hz. (Sync information)
Black level:	1500 Hz.
White level:	2300 Hz.

Here's a representation of the 120-line SSTV screen. The full screen takes eight seconds to transmit. Note the last 5mS synchronising at the end of each line.



scan data is converted to fast scan and, of course, vice versa.

Memory: One frame required 128 X 128 X 4 binary levels = 65536, or 65K bits per frame. Four binary levels supported 16 grey scales, or shades of grey.

I built one here on Norfolk Island after a design by ZL1HU, and it could display the slow scan image on a conventional TV. It was available in 50Hz or 60 Hz models, and at that time boards were readily available. After the ghostly yellow glow of the eight-second P7 image, this system was a real revelation. The display of the slow scan image on the screen of a black and white TV was magic and, later, colour boards became available for the system.

In the same way, the scan converter took video from a camera for example, stored the data in RAM memory and it was then converted to analog SSTV tones. These tones were fed into the microphone socket of the rig and then transmitted.

Colour

It seems only a relatively short time ago that TV images, cinema pictures and most everyday photography were all in black and white. In fact, the high-grade 256 grey scale of today is capable of conveying a strong computer image, and colour often seems unnecessary. However, once colour TV arrived nobody wanted to view a black and white screen.

In SSTV, the drive to generate and receive colour images was very strong and the scan converter gave the SSTVers the possibility of success. By using three memory banks, one could be used for the RED, another for the BLUE and another for the GREEN images.

To generate the colour picture, three scans of the image through red, blue and green filters resulted in the three images which could then be transmitted sequentially. The three RGB pictures were then received in the same way and stored in memory. They were then combined to produce the final colour image... exciting stuff!

This system was soon changed to a system of sequential lines which gave better results. That is, a line of the frame was sent as a red line, rewritten as a blue line and then as a green line. At the receive end this three-colour line was combined to produce the final colour line. This was repeated for the whole frame, thus assembling the colour image line by line. (Note the sequence order is for discussion only; see later standards)

Robot Research Inc.

We were still in the '80s when Robot Research Inc started the Robot Colour System. In this system the chrominance and luminance information was sent within each line just like normal television. By 1985 onwards Robot had produced a high-resolution colour scan converter which became the 'must have' of the Slow Scan enthusiasts. The concept set very high SSTV standards and many clones were built in a move to cut costs as the commercial item was quite expensive.

The strength of the Robot unit (and others) was the dedicated SSTV approach, which gave multi-mode capability and was a big plus as, over the years several SSTV systems had evolved. As they often had different standards for frame rates, number of lines, sync info etc, things were getting a bit untidy.

The Robot 1200C handled these modes by offering four frame rates for both black and white and colour. Its high-resolution format had 240 lines (very close to typical VCR VHS tape resolution of, say, 270 lines), was 256 pixels wide and had a 256K colour palette.

A remarkable achievement capable of producing stunning images and a measure of just how far SSTV had progressed.

Vertical Initial Signalling

One further important step was taken by Robot Research with the introduction of the Vertical Initial Signalling (VIS) system. In short, it meant that on transmission the VIS was coded into the SSTV image data and so it identified which mode was being used.

On receive, this VIS code set the Robot converter to the correct mode, and when the SSTV picture had been received the unit then reverted to standby. See the concluding **Part 2** next month for further discussion on VIS.

FREE BOOK!

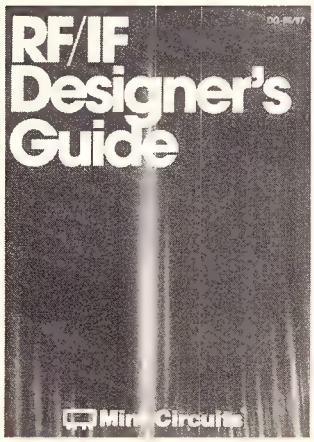
Mini-Circuits Designer's Guide

To encourage Radio Amateurs to build and develop their own communications equipment, Mini-Circuits USA is offering, free of charge, its RF/IF Designer's Guide for 1996-97.

Mini-Circuits manufactures an extensive range of mini-modules, such as RF amplifiers, frequency mixers, power splitters, filters and detectors, attenuators, and more.

Circuits are available in various case style packages to suit applications from surface mount to external equipment mounts. Typical mixer frequencies range from 10kHz to 43GHz, making them ideal for engineers interested in LF to SHF work.

The 175-page catalogue covers the whole range of RF/IF products, including new VCO modules, active mixers and the latest ERA monolithic amplifiers covering DC to 8GHz and high-powered splitters/combiners with up to 20 watts power-handling capability.



Full technical and mechanical specifications are included and now many product families have designer kits available, making prototyping quicker and easier.

If you would like a free copy of RF/IF Designer's Guide, contact Mini-Circuits' Australian representative and stockist, Clarke & Severn Electronics, PO Box 1, Hornsby, NSW 2077 or call (02) 9482 1944.

Alternatively, fire up your Internet machine on website http://www.Buynet/clarsev.com.au

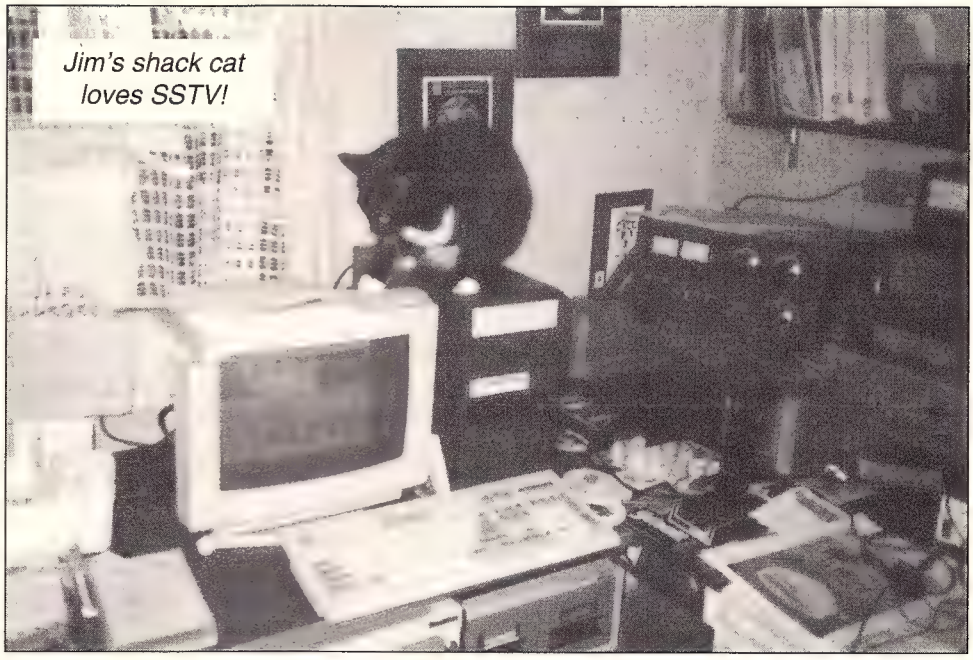
As computer technology has leapt ahead, slow scan converters have also progressed. EPROMs can be programmed to control the modes and the functions of the converter.

The EPROM can easily be replaced making a new mode possible further adding to the versatility of the converter. With a suitable interface board, the converter can be controlled by a computer via the serial or parallel port.

To see a high-quality colour image appearing line by line on your computer screen from an amateur in the US, Mexico, Japan, South Korea, Australia, New Zealand or wherever is a great experience.

All this from audio tones burbling away from the receiver output.

Many VK and ZL amateurs can be proud of their pioneering input to SSTV helping to result in the systems. Newcomers to the mode will find guidance readily available on the bands from many experienced enthusiasts.


Jim's shack cat loves SSTV!

In next month's part of The SSTV Story we will move along into the slow scan world of today.

We will look with more detail into the various standards, operating and more. Later we will see how a further revolution has taken on thanks to JVFAX, a remarkably simple computer interface, plus the writing of some great SSTV software.

Your input to the series is welcome.

References:

Slow Scan TV. Dave Ingram, K4TWJ.
Scan Converter. Dave Cowie, ZL1UH.
The ARRL Handbook.
Robot is the trademark of Robot Research Inc. USA.

✶ KEVIN CAVANAGH - No 1 for Amateur Radio Supplies ✶

GAP ANTENNA PRODUCTS

The design engineers at GAP realise there isn't a perfect antenna. No singular antenna will scream DX on 80 and be the best for local nets on 10. If anyone tells you there is, beware! The perfect antenna does not exist, but the right one for you may. If you want something to bust the pile on the low bands, then consider the Voyager. Just starting out in ham radio and need a general coverage antenna, the Challenger is easy to assemble and for little effort will yield superior performance, especially on DX. Maybe you knowingly or unknowingly moved into one of those 'restricted areas' where the Eagle limited visability but unlimited ability is desired.

MODEL	2M	6M	10M	12M	15M	17M	20M	30M	40M	80M	160M	HEIGHT	PRICE
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Titan			✔	✔	✔	✔	✔	✔	✔	✔		7.5m	$672
Voyager							✔		✔	✔	✔	15m	$900

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Queensland 4503

Emergency Services round-up

By Michael Evans email michael@tbsa.com.au

The first in our series of the **Emergency Services Roundups** is going to look at **Victoria** — and being my home state this is right down my alley!

The Victoria Police force does a magnificent job in serving the day-to-day needs of Victoria's people, and to assist them in doing just that, they have a very large and comprehensive two-way radio dispatch network comprising HF, VHF and UHF communications systems.

The HF network is used for interstate communications and for the outlying areas within Victoria where it is not practical to expand the existing VHF or UHF networks. HF propagation allows for huge distances to be covered when compared to other means.

Tune your favourite HF receiver to the following frequencies to hear the Victoria Police:
2.2854, 2.4895, 2.5705, 2.5765, 2.6320, 2.7295, 3.7305, 3.7335, 3.7365, 3.7445, 3.7535, 3.8215, 4.5265, 4.5585, 4.5600, 4.5685, 4.5745, 4.7815, 4.8465, 4.8815, 5.1285, 5.6815, 5.9075, 5.9165, 5.9325, 7.6585, 7.6600, 8.0515, 10.5050, 11.0465, 14.5735, 14.7535 and 18.5435 MHz.

You will not hear a terrible lot on the HF frequencies, but you will at least hear radio checks being done each morning from VKC Melbourne.

The Police communications until recently was handled by 'D24'. The name D24 related to the floor and the room within which the communications were originally handled, and the moniker kind of stuck. The Russell Street Police complex was the hub of the communications network until the middle of 1996 when the police moved into the new multi-million dollar Police complex near the World Trade Centre.

All communications are now handled by the US-based company Intergraph hence it is now the private sector that is taking and despatching most of the emergency services calls today.

Metropolitan Melbourne is serviced by basically 11 different channels, although these can be tied in together or separated at will by the radio dispatchers depending on what is happening at any given time.

Again, Victoria uses the standard 64 channels allocated nationally for their Metropolitan communications network. Here they are:

467.850 Channel 1
467.875 Channel 2
467.900 Channel 3
467.925 Channel 4
467.950 Channel 5
467.975 Channel 6
468.000 Channel 7
468.025 Channel 8
468.050 Channel 9
468.075 Channel 10
468.100 Channel 11
468.125 Channel 12
468.150 Channel 13
468.175 Channel 14
468.200 Channel 15
468.225 Channel 16
468.250 Channel 17
468.275 Channel 18
468.300 Channel 19
468.325 Channel 20
468.350 Channel 21
468.375 Channel 22
468.400 Channel 23
468.425 Channel 24
468.450 Channel 25
468.475 Channel 26
468.500 Channel 27
468.525 Channel 28
468.550 Channel 29
468.575 Channel 30
468.600 Channel 31
468.625 Channel 32
468.650 Channel 33
468.675 Channel 34
468.700 Channel 35
468.725 Channel 36
468.750 Channel 37
468.775 Channel 38
468.800 Channel 39
468.825 Channel 40
468.850 Channel 41
468.875 Channel 42
468.900 Channel 43
468.925 Channel 44
468.950 Channel 45
468.975 Channel 46
469.000 Channel 47
469.025 Channel 48
469.050 Channel 49
469.075 Channel 50
469.100 Channel 51
469.125 Channel 52
469.150 Channel 53
469.175 Channel 54
469.200 Channel 55
469.225 Channel 56
469.250 Channel 57
469.275 Channel 58
469.300 Channel 59
469.325 Channel 60
469.350 Channel 61
469.375 Channel 62
469.400 Channel 63
469.425 Channel 64 ... ☞

Police districts

A District Channel 36
1 Division
East Melbourne
Richmond
Russell Street
2 Division
Carlton
City West
Collingwood
Fitzroy
Royal Park
Victoria Dock

B District Channel 12
1 Division
Elwood
Prahran
St Kilda
2 Division
Port Melbourne
South Melbourne
St Kilda Road

C District Channel 71
1 Division
Beaumaris
Bentleigh East
Cheltenham
Clayton
Moorabbin
Oakleigh
Sandringham
2 Division
Bentleigh
Brighton
Caulfield
Elsternwick
Glenhuntly
Malvern
Murrumbeena

D District Channel 70
1 Division
Dromana
Frankston
Hastings
Mornington
Rosebud
Rye
Seaford
Sorrento
2 Division
Chelsea
Mordialloc
Springvale

E District Channel 69
1 Division
Berwick
Bunyip
Dandenong
Doveton
Pakenham
2 Division
Cowes
Cranbourne
Koo Wee Rup
Lang Lang
San Remo
Wonthaggi

F District Channel 68
1 Division
Croydon
Healesville
Lilydale
Mooroolbark
Mt Evelyn
Warburton
Yarra Glen
Yarra Junction
2 Division
Bayswater
Belgrave
Emerald
Ferntree Gully
Monbulk
Olinda
Ringwood

G District Channel 60
1 Division
Box Hill
Glen Waverley
Mt Waverley
Nunawading
2 Division
Ashburton
Balwyn
Camberwell
Doncaster
Hawthorn
Kew

H District Channel 67
1 Division
Heidelberg
Heidelberg W
Northcote
Preston
Preston East
2 Division
Diamond Creek
Eltham
Epping
Greensborough
Hurstbridge
Thomastown
Whittlesea

I District Channel 66
1 Division
Avondale Heights
Broadmeadows
Campbellfield
Craigieburn
Gisborne
Macedon
Riddell's Creek
St Albans
Sunbury
Westmeadows
2 Division
Brunswick
Coburg
Flemington
Moonee Ponds

J District Channel 65
1 Division
Altona North
Footscray
Kingsville
Newport
Williamstown
Yarraville
2 Division
Bacchus Marsh
Laverton
Maidstone
Melton
Sunshine
Werribee

K District Channel 72
1 Division
Anglesea
Barwon Heads
Drysdale
Geelong
Lorne
Ocean Grove
Portarlington
Queenscliff
Torquay
Winchelsea
2 Division
Bannockburn
Corio
Inverleigh
Lara
Meredith

Emergency Services round-up

Victoria Police UHF channel allocations
A Division Channel 36
B Division Channel 12
C Division Channel 71
D Division Channel 70
E Division Channel 69
F Division Channel 68
G Division Channel 60
H Division Channel 67
I Division Channel 66
J Division Channel 65
K Division Channel 72

City Traffic Channel 26
North East TAC Channel 45
Police Training Channel 25
Protective Services Channel 23
South East TAC Channel 48
West TAC Channel 24

The Police vehicles are all fitted out with Motorola two-way radio equipment.

For the most part the metropolitan vehicles are using Motorola MCX-100 mobiles together with Saber III portables.

The Police network uses an extensive system of multi base station voting, and the voting groups are as follows:

Channel 65 voting on channels 13, 15 & 63
Channel 66 voting on channels 40, 41 & 62
Channel 67 voting on channels 43, 55 & 56
Channel 68 voting on ch 17, 19, 21, 44 & 60
Channel 69 voting on channels 59, 61 & 64
Channel 70 voting on channels 27, 34 & 42
Channel 71 voting on channels 14, & 28
Channel 72 voting on ch 35, 37, 49, 50 & 51

For those unfamiliar with the **voting** concept, it is a means where the radio automatically scans a pre-programmed set of channels to find the best possible signal.

All the hard work is done by the radio; the operator does not need to switch channels at all.

The more covert divisions of the force, such as the District Support Group (DSG), the Special Operations Group (SOG), the Drug Squad and others pop up from time to time on various channels usually in encrypted mode using Motorola's DVP system.

The country Police network has undergone a huge change recently with almost all of the country Police sites now migrating onto the new VHF trunking network.

As the network is still very young, so to speak, detailed information is still sketchy, but I can offer the following frequencies provided by fellow scanner enthusiasts:

163.5750 Daylesford & Mt Belvue
163.6125 Mt Stanley & Mt McKay
163.6750 Mt Buller & Mt Blackwood
163.7000 Mt Alexander
163.7375 Mt Macedon & Mt Hotham
163.8375 Echuca
163.8875 Shepparton
164.0125 Bendigo

The new network seems very complex indeed, with each district and division within that district having their own radio channel to operate on, so what that means is that there is at least 12 separate channels covering L1 through to Q2 inclusive.

The Mt Macedon channel booms into Melbourne, and sitting at home I can monitor what is happening in O District #1 Division, Bendigo, using nothing more sophisticated than a simple indoor antenna.

If you know of other frequencies being used, send them in and we will share them with everyone.

You can email the details to michael@tbsa.com.au, or failing that to the production editor, VK3CE, who is listed on page 3 of this issue.

The SES

And finally for Victoria, the State Emergency Service. This vital group of volunteers utilises the same UHF channels as the police for their metropolitan services and major country areas with a huge radio network.

468.600 Police Channel 31 SES Channel 1
468.625 Police Channel 32 SES Channel 2
468.650 Police Channel 33 SES Channel 3
468.550 Police Channel 29 SES Channel 4
468.575 Police Channel 30 SES Channel 5

For the more serious HF listeners amongst us, the SES also have their own chunks of the HF band that they occupy from time to time, and could be monitored on the following frequencies:

2.5700, 2.5705, 2.5765, 3.7305, 3.7335, 3.7365, 3.7445, 4.5685, 4.5745 and 5.8345 MHz.

Ambulance

Moving right along, we come to the Ambulance Services for Victoria.

The Country Regional Ambulance services are served basically by the old VHF low band radio network that covers practically all of the state, most of the vehicles are fitted out with Philips FM 92 equipment.

The MFB

The **Melbourne and Metropolitan Fire Brigade** (MFB) services the fire and rescue needs of Melbourne, and there are moves afoot to make it into a paramedic-style service as well, similar to some US fire departments.

Again, all calls are despatched via Intergraph at the communications centre, and they can be monitored on the following channels:

465.075 MMFB Ch 08 Techs
465.375 MMFB Ch 07 Data Channel
465.675 MMFB Ch 06 MFB Engineering
465.975 MMFB Ch 05 Major Incident Channel
466.275 MMFB Ch 04
466.875 MMFB Ch 03 South & East Channel
467.475 MMFB Ch 02 North & West Channel
467.775 MMFB Ch 01 Central Metropolitan
469.575 MMFB Ch 09
469.900 MMFB Ch 10

Once on the fire ground, local communications takes place on Channel 9 or Channel 10.

When monitoring the MFB you will hear lots of different callsigns. They are quite straightforward to identify when armed with the following information. For example, you may here a vehicle call in as PUMPER 1A. This will be Pumper A from Number 1 Station, in this case the A Pumper From Eastern Hill.

MFB Fire Station numbers
1 Eastern Hill
2 West Melbourne
3 Carlton
4 Brunswick
5 Broadmeadows
6 Coburg
9 Fitzroy
10 Richmond
11 Lalor
12 Preston
13 Northcote
14 Rosanna
15 Ivanhoe
16 Greensborough
18 Hawthorn
19 Kew
20 Box Hill
21 Surrey Hills
22 Ringwood
23 Burwood
24 Malvern
25 Oakleigh
26 Croydon
27 Nunawading
28 Mount Waverley
29 Glenhuntly
30 Templestowe
31 Wheelers Hill
32 Brighton
33 Mentone
34 Moorabbin
35 Windsor
36 Sandringham
37 St. Kilda
38 South Melbourne
39 Port Melbourne
40 Laverton
41 St. Albans
42 Newport
43 Deer Park
44 Sunshine
45 Spotswood
46 Altona
47 Footscray
48 North Melbourne
50 Moonee Ponds
51 Keilor
52 Essendon

The metropolitan fire fighters are all paid professionals, with all stations manned on a 24-hour basis to respond to numerous types of calls.

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The channels are:
Channel 1 76.67
Channel 2 76.25
Channel 3 76.43
Channel 4 76.49
Channel 5 76.73
Channel 6 76.91
Channel 7 76.01

You will find that sometimes the operator requests a car to change to a channel number from 10 upwards. These are not additional channels as such, they are the same channels as above but with different CTCSS/PL tones to activate different repeater and link networks.

So if an operator tells a unit to change to Channel 10, you should use Channel 1. If they call for any channel from 20 to 29 you use Channel 2, and so on.

The Melbourne Metropolitan Ambulance Service, known as 'MAS', operates an extensive UHF radio network in the 412-415 MHz band.

Little is known about the specifics of this complex network, however I can offer the following limited information:

413.425 Local Metropolitan Channel
413.075 Inner City Channel
413.150 Western Suburbs Channel
413.225 Northern Suburbs Channel
412.850 Eastern Suburbs Channel
413.125 Southern Suburbs Channel

There is still talk going around that the MAS will eventually go onto a data system for giving out the jobs, so we shall have to wait to see if or when that occurs.

The Ambulance in Metro areas are also using 'AVL' which stands for **Automatic Vehicle Location** and is a means by which the radio dispatchers can see exactly where a car is located on a very complex computer platform running some very high-tech customised mapping software.

From what I have been able to find out, each ambulance vehicle is fitted out with a GPS unit, and this relays the relevant data back to the dispatcher on a separate data-only channel where the software and computer do all the clever stuff to give a graphical representation of what is going on.

Well, that's a wrap for Victoria. Next month we'll take a look at the emergency services radio usage in another state.

The CFA

The Victorian **Country Fire Authority** has also been on the move, radio-wise, being forced off its original VHF high-band channels by the SMA to make way for the Victorian Government Trunking Network.

There are a couple of regions that are now also involved with the MMFB on a sharing of services arrangement, and they too are handled via the Intergraph dispatchers.

The regions affected by this are Regions 7, 8, 13 and 14 which basically covers all of the country areas surrounding metropolitan Melbourne, or simply the same districts as the Police A to K listed above.

Region 7 Geelong District
Region 8 Dandenong Ranges
Region 13 Knox, Lilydale
Region 14 Melton

To hear the repeater outputs, tune your favourite receiver to these:
162.1625 Mt Matlock
162.1875 Bayview-Haines Rd, Gnarwarre
162.2375 Poley Fire Tower, O'Shannessy Dam
162.4000 Geelong Water Board site, Mt Ingoldsby
162.4125 Police Site, McDowell Rd, Bass Hill
162.5750 Bayview-Haines Rd, Gnarwarre
162.6750 Telstra Site, Dunns Hill, Ferny Creek
162.6875 Mt St Leonard
162.7250 Victoria Police Site, Arthurs Seat
162.7750 SEC Site, Mt Macedon
162.8375 Fire Watch Tower, Mt Blackwood
162.8875 Lookout Tower, Mt McDonald
163.5250 Telstra Site, Dunns Hill, Ferny Creek
163.5375 Westcoast Site, Warrion Hill
163.5500 Victoria Police Site, Arthurs Seat
163.5625 Kinglake Rd SEC Site, Kinglake
163.6000 Police Site, Marengo

The other areas of Victoria served by the CFA have also been moved off their channels, and these are the new ones within the SMA 12.5kHz band plan.

Thanks to Stuart D from Corio who is a regular on the internet, and a keen CFA listener. He has provided the following information:

Region 2 161.1000
Region 2 Goto 1 161.1875
Region 2 Goto 2 161.0875
Region 4 161.1125
Region 4 Goto 1 160.9875
Region 4 Goto 2 161.0875
Region 5 161.0500
Region 5 Goto 1 161.0125
Region 5 Goto 2 161.0375
Region 6 161.1875
Region 6 Goto 1 161.0875
Region 6 Goto 2 161.0000
Region 7 160.9875
Region 7 Goto 1 161.1250
Region 7 Goto 2 161.0125
Region 8 161.0375
Region 8 Goto 1 161.1875
Region 8 Goto 2 161.2250
Region 9 161.1625
Region 9 Goto 1 161.0625
Region 9 Goto 2 161.0250
Region 10 161.0000
Region 10 Goto 1 160.9875
Region 10 Goto 2 161.0375
Region 11 161.0750
Region 11 Goto 1 161.0250
Region 11 Goto 2 161.0500
Region 12 161.0125
Region 12 Goto 1 161.2250
Region 12 Goto 2 161.1375
Region 13E 161.0875
Region 13E Goto 1 161.2000
Region 13E Goto 2 161.1000
Region 13W 161.1125
Region 13W Goto 1 161.1750
Region 13W Goto 2 161.1250
Region 14 161.0625
Region 14 Goto 1 161.1500
Region 14 Goto 2 161.0500
Region 15 161.0250
Region 15 Goto 1 161.1625
Region 15 Goto 2 161.2000
Region 16 161.0750
Region 16 Goto 1 161.1375
Region 16 Goto 2 161.1750
Region 17 161.2250
Region 17 Goto 1 161.1500
Region 17 Goto 2 161.0000
Region 18 161.1250
Region 18 Goto 1 161.0375
Region 18 Goto 2 160.9875
Region 20 161.1250
Region 20 Goto 1 161.0500
Region 20 Goto 2 161.0250
Region 22 161.1500
Region 22 Goto 1 161.0370
Region 22 Goto 2 160.9875
Region 23 161.0500
Region 23 Goto 1 161.0750
Region 23 Goto 2 161.0625
Region 24 161.1250
Region 24 Goto 1 161.0125
Region 24 Goto 2 161.0875
Region 26 161.1375
Region 26 Goto 1 161.0000
Region 26 Goto 2 161.0750

(Note that the 'Goto' channels are used primarily for training purposes or for managing a very large fire. Ed.)

It seems to me that finally band conditions are on the turn and that the higher bands are beginning to open up once again. Of course it is true that conditions do change anyway at this time of the year but yesterday, in the space an hour or so, I made QSOs on 20, 15, 17, 12 and 10M.

Agreed, no wall-to-wall pile ups on 10M but I did score a couple of solid QSOs with JA on SSB. 17M has been consistently open to Europe in my evenings and, although I work mainly CW, the SSB segment is also active. It is noticeable that signals can be very weak yet, because the band is quiet (a bit like 10M of old), they can be copied right down to the noise floor. It is certainly worth checking the bands and having a CQ call.

15M was very good also, and again, Europeans were worked on SSB with signals often very weak but solid copy each way. So just maybe things will keep heading this way and keep improving.

20M long path to Europe at around 0500 UTC suddenly opened up with a bang yesterday (as I write this). It was quite a surprise to be suddenly in a huge pile-up, and many of the signals were very strong. However underneath it all were many stations around S2. Once you get into working Europeans it is immediately noticeable how prominent the 'Last Two' routine has become.

By the time you read this, Warren Hull, VKØWH will have almost finished his stint on Macquarie Island. I thought it might be nice just to thank him on behalf of us all for his efforts on the bands during his stay. As a result of his application many got a new CW DXCC Country from a very rare VK location.

As a result of his application, his logs became available to me promptly and very reliably by fax. The exception was the August log as it was just a bit too long to fax. Nevertheless, it came to Norfolk promptly by ship from Macquarie to Hobart and then Air Mail to here. As a result of all this I was able to QSL most DXers literally by return mail. Thought you might like to join me in a word of thanks to Warren for a job well done.

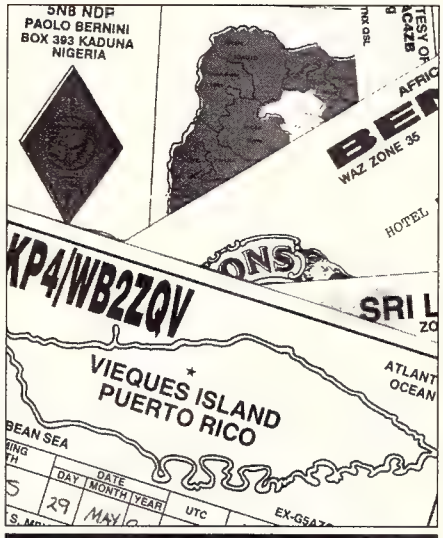
Graham, VK5WG will be with the Met group on Macquarie for this next season and will sign **VKØGW**. Graham is taking gear with him but says that he may not be too active. However, the main thing is that Macquarie will continue to be active for another season.

QSLing

Occasionally I write the odd words on QSLing just to clarify a few points. I thought it might be a good idea to spell out a few things in coming issues which might make things easier.

Let us begin with the QSL Bureau scenario. QSLing via the bureau is part of the amateur radio scene and in theory at least is certainly a cheap way to exchange QSL cards.

The word 'exchange' is used here in a deliberate fashion. After all, during the QSO with station X, this QSL arrangement has



DX & BAND REPORT

Compiled by Jim Smith, VK9NS
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been agreed between you both!

Each of you know that it may take some time, but if you both do as you say (namely actually QSL), then a year or so down the track each will have the other's card. Fine so far.

Many others QSL via the bureau without this agreement, and at this point things go terribly wrong. To be kind, your card has only a 50 per cent chance of reaching its destination. Why is this? Only 50 per cent of the world's radio amateurs belong to a national society. In fact, in many countries — for example Japan — that membership percentage is much lower.

Even if an amateur does belong to the local society, a large number cannot be bothered to keep the bureau clear of QSL cards. No major problem there as they probably never asked for the card anyway. But one would think that lodging a couple of large SAE with the bureau would be no big deal. Not so.

Most societies do not handle cards for non-members. Next column we'll continue the QSL saga.

St Lucia, J6

The Southwest Ohio DX Association is planning an assault on St Lucia from November 19 to December 1, 1996. They plan to be active during the CQ WW DX Contest during the CW weekend. Callsign will be J6DX.

However, outside of the contest expect plenty of activity on all modes and bands from the following, who are the team for J6DX.

J68AE (WB8ENR); J68AG (WD8IXE); J68AH (ACØS); J68AK (W8QID); J68AR (K9BQL); J68AS (N9AG); and J68ER (W9UI).

QSLs for the above go the home call.

Angola, D2

It is noted that Alex, PA3DZN has been assigned to Angola for at least six months starting mid-October.

Alex has been active from many locations; he likes the low bands and promises activity on 160, 80 and 40M.

No callsign is given but the license is available on his arrival. No QSL info yet but Alex usually does his own QSLing but we shall see.

Vietnam, XV

Rolf, SM5MX should be back in Hanoi now after being home in Sweden on a few weeks vacation.

Rolf signs XV7SW and has been fairly active in the past. He is limited (by his license) to the following frequencies: 1827, 3506, 7007, 14,016, 14,021, 21,016, 28,016 and 28,019 kHz. I have heard him several times on that 40M CW slot.

QSL Route: Buro cards to Swedish Bureau. Direct with SAE and Greenstamp to manager SM3CXS, or via post: Rolf T Salme, Embassy of Sweden, Box 9, Hanoi, Vietnam.

The following stations are also authorised to operate: 3W5FM, 3W5RS, 3W6AR, XV7TH.

Hong Kong, VS

As the time for Hong Kong winds down, one wonders what will happen after the hand over in mid-1997. With immediate effect, Hong Kong radio amateurs can now sign 96 in their call during 1996, 97 during 1997 and 98 during 1998. So that, for example, VS6WO will be VS96WO, VS97WO, VS98WO and VR2GK can sign VR96GK, VR97GK and VR98GK. It appears that the callsign block VRA-VRZ will be transferred to the People's Republic of China with effect from July 1, 1997.

The above arrangements of special calls was made between the Hong Kong Amateur Radio Transmitting Society (HARTS) and the Hong Kong Government.

Canada, VE

In my recent work on the International ITU Prefix list for the magazine I marvelled at the various blocks assigned to Canada. If you don't believe me, expect the following special prefixes from Canadian amateurs. These calls will be in use from October 26 until December 29, 1996 to celebrate 60 years of broadcasting by the Canadian Broadcasting Corporation.

VA2 to XM2; VA3 to CJ3; VA7 to VX7; VE1 to CG1; VE2 to CI2; VE3 to CI3; VE4 to XL4; VE5 to XM5; VE6 to VA6; VE7 to XK7; VE8 to CH8; VE9 to VB9; VI1 to XO3; VO2 to CZ2; VY1 to CK5; VY2 to XN2

Bangladesh, S2

It seems ages ago since my longish involvement in assisting in getting amateur

radio started in Bangladesh. I had an excellent QSO with Andrew, S21YE on 20M at 0900 UTC, and it was as a result of a sked made earlier. Andrew expects to be in Bangladesh for a further two years and says that renewal of his license is very easy these days.

You may recall that the S21Z and Y structures are used for foreign nationals. I hold license S21ZA and Kirsti is S21ZB, for example.

However the point is that, according to the Bangladeshi Amateur Radio League (BARL), there are now 14 licensed Bangladeshi amateurs. This is a great success story for them and has taken just four years to attain. The stations are:
S21A Saif; S21B Nizam; S21C Iqbal; S21D Nazrul; S21E Nazrul; S21L Anwar; S21R Rana; S21S Sohel; S21AA Tarique; S21AB Shabya; S21AM Monju; S21AR Rashid; S21AS Sharif; S21AT Taimur; and S21HQ is the BARL Club station. So congratulations to all at BARL and BTTB.

Madagascar, 5R

It is good to see continuing activity from this area which at one time it was a very rare DXCC country due to no activity.

Ray, 5R8FJ and his wife Donnie, 5R8FK are reported to be active on 40M CW. They say there are problems with the mail due to pilfering.
QSL Route for 5R8FJ and 5R8FK: Ray Shankweiler, BP 620, 101 Antananarivo, Madagascar

Cape Verde, D4

I've not heard D44BC for some time. He used to be readily available on all bands, usually with great signals. I notice that a group of German amateurs is scheduled to operate from the QTH of D44BC from November 20 to 27, 1996. They plan to be active during the CQ WW CW DX weekend on all bands.

The group is Falk, DK7YY; Dietmar, Tom; DL2OAP and Hein, DL2OBF.
QSL Route: D44BC

Libya, 5A

The changes and comments about the QSLing arrangements for the 5A1A situation changes weekly. It now seems that Carl, N4AA can also QSL for stations outside the USA.

Let us just recall that first there is the Ukrainian 5A1A operation; they gave two managers, one for CW the other for SSB QSOs.

Then there is the current on-going operation by Libyan nationals from the 5A1A Club in Tripoli. They suggest QSLing direct using registered mail which I recall writing was an expensive option for us here in VK. Anyway here are the various addresses for the current operators:
5A1A (operator Ali) PO Box 80462, Tripoli, Libya
5A1A (operator Usama) PO Box 78665, Tripoli, Libya
5A1A (operator Abubaker) PO Box 74421, Tripoli, Libya

DX & BAND REPORT

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OM3JW, who was the designated manager for SSB QSOs with the Ukrainian 5A1A operation, has this to say: "My position as manager is not good. I merely collected the incoming QSL envelopes and then forwarded them to Kiev, Ukraine (via a safe route).

"I have a copy of the logs and some cards, and I will QSL anyone who says they have been unable to get a card from Ukraine because I feel responsible. The situation is not normal but is not my fault."

Spratly, 1S

There is talk that Jaan, 9M2JJ has received permission to operate from Layang Layang island and a 9M6 prefix has been allocated. However the last operations signed a 9MØA and 9MØS and Jaan is trying to have the authorities change the call to a 9MØ prefix. No further details at this time.

Guinea-Bissau, J5

The recent operation from Guinea Bissau had several QSL routes for the fortunate who worked any or all of them. Here are the details:
QSL Route for J59KX: Hans Walter Hannapel, DK9KX, Eschenbruchstr 1, 51069 Koln-Dellbruck, Germany.

QSL Route for J59ON: Dr Dieter Messer, DJ9ON, Hoher Wald 31, 51519 Odenhal, Germany.

St Helena, ZD7

Chris, ZD7HI is active, and he was very weak here working NH2G in Guam on 20M SSB. I'll try to make QSO with Chris over the coming days. This is the first time I have heard ZD7 for a *long* time.
QSL Route for ZD7HI: Chris, PO Box 140, St Helena.

United Nations, 4U

4U51UN has been active to celebrate the 51st anniversary of the United Nations.
QSL Route: WB8LFO

Trinidade, PYØ

The operation from Martin Vaz Island signing ZVØMB and ZVØMV is on track and should be history by the time you read this. This island counts as credit for Trinidade, which is a tough one for VKs.

There has been a last minute change in the QSL Route:
QSL Route for ZVØMB and ZVØMV: R Stucker, PT2GTI, PO Box 09647, 70001-970 Brasilia, DF, Brazil.

VK calls

John, G3HTA reports that he has had his QSL card sent to VK4FW returned and marked SK (Silent Key). That was presumably done by the bureau. The call VK4FW is now held by Bill, ex-VK4CRR, VK4VD etc. The question is this: what is the policy for the reissue of VK callsigns, especially in the case of a SK operator? Does anyone know??

Myanmar, XZ

The full-scale operation by 12 USA operators plus Martti, OB2BH and Kan, JA1BK is scheduled to take place from November 15 to 25.

The operation is from the New World Inya Lake Hotel in the outskirts of Yangoon. Expect plenty of operation on all bands and modes.
QSL Route: W1XT via bureau or direct.

Martti, OH2BH has been signing XZ2BH and here is his new address for future QSLing:

QSL Route for XZ2BH and XX9X: Martti Laine, OH2NH, Nuottaniementie 3D20, 02230 Espoo, Finland

UAR, A6

Don, WB2DND is scheduled to return to UAR in November signing A61AD. He will be active on all bands, but is making a special effort on 160M and has shipped some 1000 feet of wire for an inverted L and a beverage antenna.
QSL Route for A61AD: WB2DND

The Web...

I received my last copy of the **NJDXA Newsletter** the other day. In my long association with the New Jersey gang their newsletter was always interesting. They were never afraid to confront the difficult issues in our world of DXing.

This 'Last Copy' was not as a result of a falling out, but rather that they are now aiming at putting the NJDXA News as an On-Line Home Page. Instant News is the word, and articles may still be sent in ....☞

WordPerfect, Word for Windows etc.

My problem is that this is really a good-bye, as it seems most unlikely that we will ever get 'On-Line' from Norfolk Island.

So times are certainly changing, but I do wish the NJDXA every success with its venture. They say there are thousands of Web Pages out there somewhere...

Andaman, VU

I *wish* I could report that Mani has received his equipment. He calls me each weekend always with the same cry: no equipment.

Well I now hope that things are finally on the move, and after speaking to New Delhi yesterday maybe, just maybe, things will finally happen. It has been impossible over the last six weeks or so to get our clearing agent to respond to faxes and telephone calls.

I am indebted to Alan, VK2FH for an independent search which he did via Qantas and Air India. He was able to finally confirm that our agent had in fact signed for the consignment.

To say that this exercise has been frustrating is hardly the word, but there are times when life is not meant to be easy. I love the challenge of it all, but sometimes I wonder...

Laos, XW

The Laos communication authorities have said that they have many applications on hand for amateur radio permission and/or licensing. Countries mentioned are Germany, Japan, Russia and Holland. They hope to get things moving soon.

Chad

TT8SP is reported to be very active on various bands, mainly on CW. I have been looking for him on 80M CW but no luck so far.

QSL Route for TT8SP: F5OIJ

Pakistan, AP

I worked AP2MY on 40M CW during the 1995 CQ WW CW Contest but had problems with the QSL card.

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Juraj, OM2SA reported that he had the logs and would QSL for AP2MY. I am happy to report I received my card by return mail and this confirmed AP, Pakistan on 40M for me.

QSL Route for AP2MY (during the contest weekend): Sipos Juraj, 930 13 Trhova Hradska 550, okr-Dunajska Streda, Republic of Slovenia.

South Orkney, LU

The recent operation from South Orkney signing LU6Z was worked by many VK/ZL stations. Dawn, ZL2AGX and others report that they have recently received their LU6Z QSL card.

Alberto, LU1DZ reported that all cards had been actioned and mailed via the bureau or direct as appropriate.

The card is a folded one with a picture of the base on the front. Some 24,000 QSOs were made and the station was active from December 5, 1995 to February 26, 1996. The operators were Hector, LU6UO and Ernesto, LU1ZPF.

Marion Island, ZS8

There is still no sign of any Marion Island QSL cards from the manager for the operation by Chris signing ZS8IR. I'm not sure what the problem is, as the manager told me that cards would be processed soon. This was some weeks ago. I guess there must be quite a back log as Chris, ZS8IR has been very busy since his arrival.

Macquarie Island, VKØ

As discussed in this month's intro paragraphs, the VKØWH Logs for August have been received and the bit of backlog has now been cleared up.

Stations QSLing me for Warren, VKØWH should note that an SAE and return postage is a requirement. A fast QSL is promised subject to the log being available.

DXCC

According to the DXCC news release dated October 3, 1996, the QSL cards are still coming in from the DXers. At the end of September the number of unprocessed applications stood at 929 with some 55,598 QSL cards. During September 1,103 applications, representing some 53,385 QSL cards, were received.

Average turn-around time was about two weeks. There is the usual proviso that, in some cases where old paper records have to be converted to a computer form, this will take a little longer.

Congratulations to Peter, VK3QI, who, 'plucking up his courage', actually committed hundreds of QSL cards to the mail system on route to ARRL DXCC. There are a few hiccups in his actual final CW Score but his Mixed Total is 342/328 and his Phone Score 339/327. I hope to have his actual CW score next time.

So that is about it for the moment. This is being written slightly early as I am going to American Samoa on a short business / amateur radio trip. I may be active as WR1Z/KH8 but have not made any decision yet. Right at this moment there is nothing else that I can do with Andaman, and I can telephone India just as easily from Pago Pago as from Norfolk Island. However I do hope that everything will be settled very soon and that Mani will get his equipment within a few days.

It's nice to have the higher bands a bit more active with good openings to Europe on 20 and 17M around 0900 UTC. There is a steady stream of DX available on 40M in our mornings and evenings, many with wonderful signals.

Many thanks to those who have written or contacted me on the air over my recent antenna articles. I am happy to report that the ARRL is printing one of my antenna articles in one of its antenna publications.

Thanks is due to the many who keep me informed on the bands, by fax and by telephone; it is always appreciated. A special thanks is due to the following DX outlets which keep the DXer informed on a regular basis: Inside DX, RSGB DX News Sheet, NJDXA News Letter (for the last time, hi!) Funkamateur, Radio Vista, QRZ DX, Les Nouvelles DX, and others.

73 from Jim, VK9NS

ISLANDS ON THE AIR (IOTA)

By Jim Smith, VK9NS

Band conditions are improving. Well, at least it *seems* that way and I have regular openings into Europe in my evening and my morning on 20M. The IOTA activity appears to be low, however this is partly due to the fact that I have worked many of the less rare IOTA numbers. My IOTA total has risen steadily and as a result the 'new ones' become harder to find.

At the moment my propagation to North America is also down, and instead of the usual high activity on 14,260 kHz around 0300/0500 UTC, things are very quiet.

It seems that the higher bands are beginning to open and 15M is becoming quite active. At the same time 17M has also been very good, and JA and Europe have been available most evenings around 0900 UTC. Let's hope that this improvement will continue over the coming months...

I've been quite busy of late trying to get the HIDXA donation of amateur radio equipment to Mani, VU2JSP on Andaman Island (AS-001). The consignment has been 'stuck' in New Delhi for several weeks now.

Dealing with VU customs, import agents and so on is quite hard, and many weeks have passed since the equipment got to New Delhi on its way to Andaman. It is hoped that matters are now resolved and that Mani will have his equipment by the time you read this.

The RSGB IOTA Check Points and HQ checking will be closed at the end of October. This allows the IOTA dBases to be brought completely up to date after several months of input from the various check points.

After this up-date is completed the new HQ IOTA dBase information will be sent to the check points. The check points will then be up to date and ready for 'business' once again.

I am looking forward to receiving a copy of the new IOTA Directory, which should now be ready for sale and distribution. It was hoped to be available at the RSGB Annual Convention. There have been quite a number of changes in the way of new IOTA Numbers since the last printing. I have also been informed that the new IOTA Directory has more information regarding the IOTA program, conditions for 'new islands', etc.

Meanwhile, like all of the IOTA hunters, I keep searching for that elusive new island to increase my IOTA total.

AN-005	VKØWH	Macquarie Island	QSL VK9NS Direct
AF-013	5R8FJ	Madagascar	QSL See info
AF-013	5R8FK	Madagascar	QSL See info
AF-022	ZD7HI	St Helena	QSL See info
AS-002	A92FZ	Bahrain	QSL CBA
AS-003	4S7DA	Sri Lanka	QSL CBA
AS-018	RAØFW	Sakhalin Island	QSL Buro or Direct
AS-020	BV7FC	Taiwan	QSL Buro or Direct
AS-075	XX9X	Taipa Island	QSL OH2BH (below)
AS-101	E21AOY	Phangin Island	QSL 7L1MFS
AS-103	BV9AAC	Penghu Island	QSL BV Buro
EU-001	SV5TS	Rhodes	QSL See info
EU-029	OZ6XY	Loland Island	QSL CBA
EU-052	G4OJH/SV8	Kefallinia	QSL G4OJH
EU-042	DL2ABM/P	Amrum Island	QSL DL2ABM (below)
EU-052	GØMYE/P	Kefallinia	QSL GØMYE
EU-052	SV1BRL/8	Kefallinia	QSL SV1BRL
EU-067	SV8/ I2YYO	Naxos Island	QSL IK2MYX
EU-088	OZ/DL8HCO	Kattegat	QSL DL8HCO
EU-088	OZ/DJ9RR	Kattegat	QSL DJ9RR
EU-088	OZ/DL1CAD	Kattegat	QSL DL1CAD
EU-133	RA1ASP	Kotlin Island	QSL RA1AD
NA-005	K1EFI/VP9	Bermuda	QSL K1EFI
NA-015	CO2JD	Cuba	QSL HI3JD
NA-015	KG4GC	Guantanamo Bay	QSL KQ4GC
NA-015	KG4QD	Guantanamo Bay	QSL WA4VQD
NA-047	VE8TA	Baffin Island	QSL CBA
NA-097	KB5VRF/6Y5	Jamaica	QSL KB5VRF
NA-097	JJ3SRU/6Y5	Jamaica	QSL JJ3SRU
NA-099	WP4Q	Puerto Rico	QSL CBA
NA-099	KP4QL	Puerto Rico	QSL CBA
NA-106	KP2/AG8L	US Virgin Is.	QSL AG8L See info
NA-148	WF1N/P	Isle of Shoals	QSL CBA
OC-013	ZK1DI	Rarotonga	QSL DK1RV
OC-026	NH2G	Guam	QSL CBA
OC-031	C21NJ	Nauru	QSL CBA
OC-169	A35DM	Ha'Apai	QSL ON4DM
SA-011	9Y4NZ	Trinidad	QSL CBA
SA-011	9Z4BM	Trinidad	QSL via 9Y4NZ
SA-011	9Y4CL	Trinidad	QSL CBA

QSL info

5R8FJ/FK	Ray Shankweiler, BP 620, 101 Antananarivo, Madagascar.
9M6AG	Yukata Yoshi, 3-33 Nakataikoyama Kosugi, Toyama 939-03, Japan.
DL2ABM	PO Box 1153, D-38501 Gifhorn, Germany.
FOØREB	Mario Rebufello, Priamo 1505, 11400 Montevideo, Uruguay.
JW6RHA	Unni Gran, LA6HRA, Mellomaassv 128, N-1414 Trollhaasen, Norway.
JW7QIA	LA8D, c/o Odd Egil, Heradsveit, Box 88, N-4301 Sandnes, Norway.
KH8AL	Craig Maxey, 9820 SW Dapplegrey Loop, Beaverton, Oregon USA.
OH2BH	Martii Laine, Nouttaniementie 3D20, 02230 Espoo, Finland.
SV5TS	Vassilios Argiris, P.O. Box 7, Paradissi, 85106 Rhodes, Greece.
V73C	N4GAK, Bruce Smith, 15 Henderson Drive, Fayetteville, TN 37333, USA
WG8L	Dave Margolis, 23401, Plum Hollow Drive, Southfield, MI 48034-3276, USA
ZD7HI	Chris, PO Box 140, St Helena, South Atlantic.

QSL cards for those stations who worked VK9WG on Willis Island recently are now being processed by Graham, VK5GW who is presently in Hobart waiting to go to Macquarie.

Graham is a part of the ANARE Team wintering on Macquarie Island next year. He is with the Met Bureau and will take equipment with him and hopes to be active as VKØGW. No QSL info at this time.

Future activity

The following IOTA activity is promised in coming weeks. Also do not forget the major CQ WW Contests, as many islands will be active.

AF-005	Cape Verde	November 20 - 27. Operation by DK7YY, DL3DXX, DL2OAP and DL2OBF from QTH of D44BC.
AS-051	Spratly	No dates; 9M2JJ from Layan Layang Island soon.
EU-057	Greifswalder	Operation by DL2RNs and DL2FVR was postponed; hopefully mid-November.
NA-108	St Lucia	November 19 to December 1. Multi Op Group. J6DX for CQWW contest. J68AE, J68AG, J68AH, J68AK, J68AR, J68AS and J68ER outside contest.

QSL cards are coming in slowly but surely, but I am waiting (like many others) for QSL cards from stations worked during the IOTA Contest.

So happy island hunting, and we'll see you next month, and next year. 73 and Happy Christmas to you all from Jim, VK9NS

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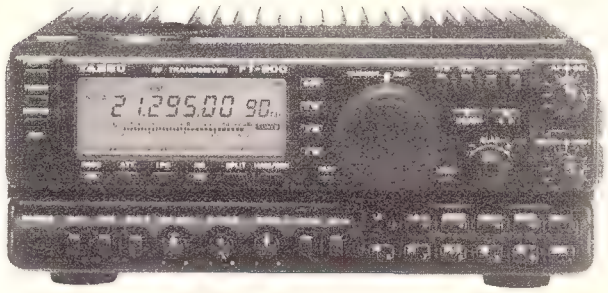

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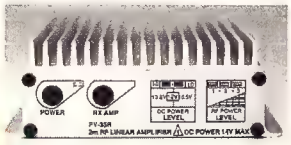

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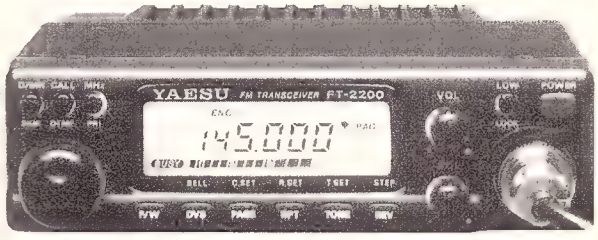

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ODDS and ENDS

or maybe Hints and Tips

By Geoff Arnold, G3GSR

If I had to give a title to the following piece, it would be 'Odds and Ends'. Mainly these will be tips for making use of discarded items — junk, for want of a better word — but some will be about using materials for purposes which were not the intention of the original designer or manufacturer.

At the top of my 'useful junk' listing would come the barrels of empty ball-point pens. I'm thinking mainly of the common-or-garden hexagonal clear plastic type, usually considered a throw-away item once the ink runs out. I suppose you could also use their posher cousins for some of the applications, although that would be a bit of a waste.

Perhaps the most obvious use is for custom-built test probes, though the very small internal diameter really limits their scope as about the only components that would fit inside are miniature signal diodes or resistors. Just what you use for the probe point itself will depend on the application you have in mind. A 6BA or M2.5 brass screw and nut (screw-head inside the barrel, nut on the outside) can be used, filing the end of the screw to a point and tinning it to prevent corrosion.

Obviously you need to remember to solder the wire to the screw-head before assembling the whole lot. An alternative method I've seen suggested is to use the old refill as the basis of the probe tip, cutting off and discarding the plastic ink tube and pushing the writing ball out of the end to leave a hole into which you can pass a sewing needle of suitable gauge. The wire is then soldered to the eye of the needle and the needle soldered into the refill tip. I must admit I've never tried this idea myself, and I'm not sure how easy it might really be to push the ball out of the tip of the refill.

It also involves making two sound soldered joints to a nickel-plated steel needle — not always the easiest of exercises. Another use for empty ball-point pen barrels is to cut them up for use as spacers on fixing screws. This sounds a nice idea, but you need to be a pretty dab-hand with a hacksaw to get equal lengths and square ends to all the spacers you produce. Success with this one requires accurate marking off and sawing. My last idea for old ball-point pen barrels is to use them as aerial insulators. Often you will see the suggestion that can be used as spacers on two-wire transmission lines, with holes drilled through them to take the feeder wires.

To stop all the spacers sliding to the bottom of the feeder, a 'whipping' of tinned copper fuse-wire at either end of each spacer is a must. For lightweight wire aerials, you can actually use the pen barrels as insulators. What weight they will safely support would depend on the size of the holes you drill in your insulator to take the wire, which will need to be pretty thin.

A suitable wire to use for makeshift, or even semi-permanent aerials, is the plastic-covered steel wire sold by garden-centres for tying shrubs to stakes.

This has the advantage of being very thin and almost invisible against many backgrounds. Use the green variety if it will be seen against a background of trees, or the brown if it will be seen against a building.

Steel wire has the benefit of being 'non-stretch' compared with copper wire of the same gauge. The purists will no doubt complain that the steel wire will be very lossy, but from my own experience of using such an aerial some years ago, I know that it works quite effectively — an SSB contact with a PY (Brazil) station using just 10W speaks for itself. There is just one snag to the near invisibility of garden wire (though this applies to all 'invisible' aerials), which is that birds cannot see it either, and will occasionally fly into it! However, during a period of a couple of years over which I had one of these aerials erected, I never knew a bird to come to permanent harm as a result.

Fixings

With most modern radio and electronic equipment being based on lightweight components and printed circuit boards, there isn't the same demand for the drawers (or tobacco-tins) full of screws and nuts of various sizes which formed an essential part of any workshop or laboratory in years gone by.

Adhesives have now taken the place of many of these traditional fixings. These may be the two-part epoxy-resin type (Araldite and similar), the cyanoacrylate superglue type, or the impact type (Evostik and similar), depending on the particular requirement and materials involved.

A useful alternative to these are products such as double-sided adhesive tape or foam pads ('sticky fixers') or strip.

The pads can be ideal for securing small PCBs to cases, although if the cases are metallic you need to ensure adequate clearance for any component lead ends protruding from the back of the board. It may be necessary to build little stacks of two or more sticky fixers to raise the board sufficiently. For securing flat objects, double-sided adhesive tape is convenient.

Like the adhesive pads and strip, these are made in various grades, used professionally in different trades. For the hobbyist, it can be difficult to come by some of the 'beefier' types, but a visit to your local hardware shop or d-i-y superstore is likely to yield 'carpet tape' (extra strong double-sided tape) and waterproof double-sided adhesive foam strip used for various purposes in modern kitchens and bathrooms.

Copper-clad

Scraps of printed circuit board material can be used for constructing little chassis — such as might be used to carry a pre-amplifier or a filter circuit. Being copper-clad, it is easy to solder to, providing you have a soldering iron of adequate size and power.

If built up into trough or box shapes by running a fillet of solder along the joins between the board sections stood at right angles to each other, it provides excellent screening. A scrap piece of double-sided

PCB material can provide a simple answer to the problem of quickly measuring total current flow in the type of transistor equipment powered by a row of perhaps two or three 1.5V cells in a plastic holder.

All that is required is a piece of double-sided PCB about 12mm by 50mm, with a connecting lead soldered to each face at one end. If the opposite end of the strip is slid between two of the batteries, a multimeter connected to the leads will indicate current flow in the set.

Providing you don't need to solder to it, aluminium foil provides an alternative to copper clad board or solid metal for some purposes, particularly screening. Some component suppliers stock 25mm-wide self-adhesive aluminium tape, but for larger areas, kitchen foil (the heavyweight 'turkey roasting' variety is easier to handle) is useful and economical.

Many years ago, when I was experimenting with corner-reflector and parabolic cylinder aerials, I built some out of hardboard, with a kitchen-foil covering stuck on with wallpaper paste, and they worked very well. Because of the unsolderability of aluminium, any necessary connections must be made by means of clamps or screws with large-area washers.

If using metallic foil for screening — to line an equipment plastic cabinet for example — you must take great care that it will not come anywhere near any live parts of the circuitry. A layer of suitable insulation material should be stuck over the face of the foil in any vulnerable areas. And need I add, the foil itself should also be earthed.

Odds and Ends

There are all manner of other things which can be used to provide a helping hand, or substitute for a tool which you do not have.

Medical forceps, with their adjustable clamping action, can be a great assistance when you're doing one of those jobs which seem to require three hands.

You can sometimes pick up forceps which have been discarded as no longer suitable for hospital use, and they are even sold by some tool stockists, but often a pair of snip-nosed pliers with a substantial elastic band wrapped around the handles to hold the jaws shut, provide a workable substitute.

Holding screws or nuts is made easy by pushing them into the end of a piece of suitable diameter plastic tubing, although since the plastic tubing often tends to have a natural curl to it, this can be a fiddly job. Once again there are proper tools, called nut-runners, made for the job, which at one time were given away as free gifts with radio hobbyist magazines.

With the increased cost of oil, from which the plastic is made, I fear this is a sales promotion aid which is unlikely to be repeated nowadays.

A thin stick with a small lump of Blu-Tack or Plasticine on the end, forms a useful tool for placing small parts into inaccessible places inside equipment, or even better for retrieving them when they have been dropped.

Over the years, I have used all sorts of other fixtures, such as stationers' bulldog clips and hairdressers' curl clips, to keep wires or components under control while I worked on them.

Other ideas include a piece of ordinary adhesive tape as a temporary restraining measure.

One of the most fiddly jobs in fitting a coaxial plug to the end of a cable is trimming the braid back neatly after fitting the retaining ferrule or body, depending on type. You can use a pair of sidecutters or similar, but I've found the best tool is nail-scissors.

I have a pair in my toolbox which I've used for the purpose for around 40 years, and I'd be lost without them...

A GOOD GROUNDING

Before leaving the general area of aerials, it's worth mentioning the use of the woven braid from lengths of discarded coaxial or screened cable. Braid makes an excellent low-resistance, low-inductance, highly flexible earth strap, for such purposes as connecting across equipment case or cabinet hinges.

Usually these pieces of cable will be quite short, cut off when newly installed cables are being cut to final length for termination. Before using longer lengths — whole coils that have been stripped out of a system, perhaps — you should examine the cable closely to make sure that the braid has not corroded due to moisture getting under the cable sheath.

Getting the braid out of the cable may be quite easy, or it may be devilishly difficult, depending upon exactly how the cable was manufactured. Sometimes the overall plastic sheath will slip off the braid and inner part of the cable without too much persuasion, but more often it will have moulded itself around the individual strands of the braid in which case it will be impossible to remove without slitting along its entire length. The important thing then is to avoid nicking the strands of the braid when slitting the sheath.

There are proper tools to do this, of course, but they are quite expensive, and one of the type of trimming or craft knives having a retractable blade, so that you can set it with just the first millimetre or so of the tip showing, can do the job quite acceptably. But do be careful...

Once the sheath is slit, it will peel away easily from the braid, which can then be 'shuffled up' along the inner insulation or dielectric, naturally increasing its diameter so that it will just slip off. Incidentally, bad continuity between different sections of an equipment case or chassis, can cause the most unpredictable results.

I remember some years ago, encountering a home-built receiver project which had been built in a case consisting of four aluminium extrusions with slide-in front, back, top and bottom, and screw-on end panels. Very convenient for access, but just slightly loosening one of the end panel screws would cause the receiver to 'take off' in a most violent manner. It was a totally unsuitable case for the project, and wouldn't easily lend itself to fitting earth straps between the 10 separate parts which made up the case.

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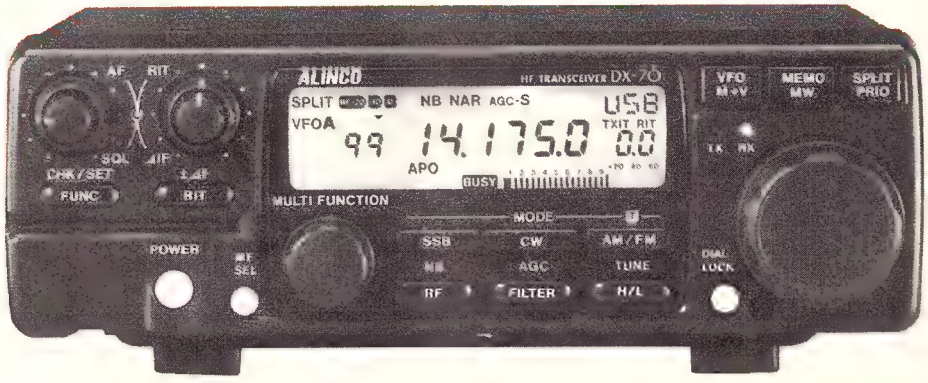

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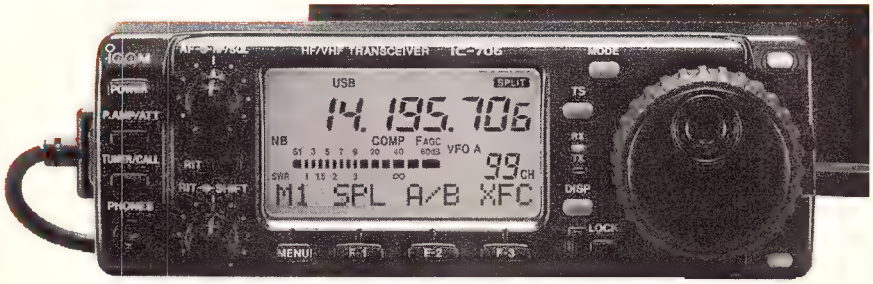

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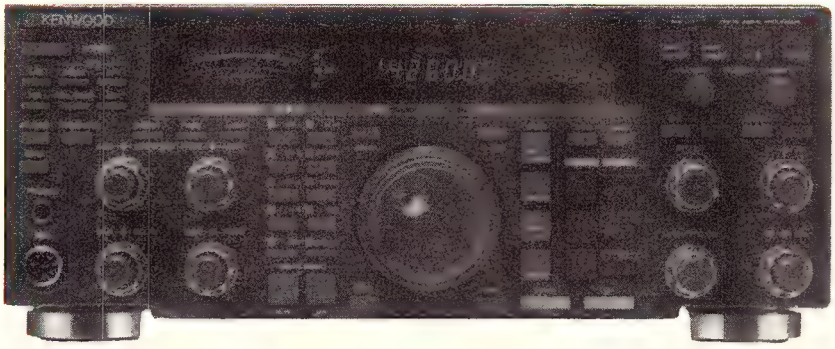

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SHORTWAVE LISTENING

All times are expressed in Coordinated Universal Time (UTC or 'z'). Add 10 hours for Eastern Standard Time, 9.5 hours for Central Standard Time, 8 hours for Western Standard Time and 12 hours for New Zealand Standard Time. Add one hour in areas where Daylight Savings Time is observed.

Most international broadcasters in Europe and North America changed to their winter operating schedules on October 27, a month later than is usual due to a change in the date for the conclusion of daylight savings time in the northern hemisphere. Accordingly, this month's column will largely be devoted to getting acquainted with the new occupancies, most of which will remain in effect until the end of March 1997.

Sunspot activity remains low, so don't expect too much activity on the 13 and 11 metre bands; quite a bit of congestion on the lower ranges is the ultimate result, but happily we are far enough away from the majority of the world's super-power transmitters that switching in the attenuator to limit spurs and splash can be kept to a minimum.

Israel Radio

Kol Israel has this schedule for programs in English and Hebrew for the northern winter period:

English

0500-0515z	7465a, 9435a, 17,545f kHz (Reshet Alef-domestic relay)
1500-1530z	11,605a, 9390a kHz (Reshet Alef-domestic relay)
2000-2025z	7465a, 9365d, 9435a, 15,640f kHz (Ext Service-Reshet Hey)

Hebrew (Reshet Bet)

0000-0655z	7495a kHz
0400-0705z	9390a kHz
0700-1455z	17,545a kHz
0700-1555z	15,615a kHz
0800-0900z	13,615a kHz (Saturdays only)
1000-1200z	13,615a kHz (not Saturday)
1000-1200z	17,575g kHz
1500-1655z	11,590a kHz
1600-1700z	11,605a kHz
1600-2305z	9390a kHz
1700-0000z	7495a kHz
1800-1845z	7395a kHz

Reshet Gimel

1200-1300z	17,695b kHz (Thursday only)
1630-1655z	9435c, 7395b kHz (Fri / Sat only)

a Western Europe & North America **b** Far East **c** Southern Russia and Northern Iran **d** Central Europe, over the pole to mid-America **e** Russia **f** Africa **g** South America **h** Southern Europe, Southern USA, Central America.

Address: IBA, Kol Israel, External Service, POB 1082, Jerusalem 91010, Israel. Fax from Australia: 0015 972 2 30 2327

This news from Daniel Rozenzweig.

WWCR update

World Wide Christian Radio in Nashville advises this schedule, effective from December 1:

WWCR1 - 100 kW - 46 Degrees

Frequency	Time	Dates
3210 kHz	0500-1100z	01 Mar 97-30 Mar 97
3210 kHz*	0500-1100z	01 Dec 96-28 Feb 97
3215 kHz	0000-0500z	01 Dec 96-28 Feb 97
3215 kHz	0100-0500z	01 Mar 97-30 Mar 97
9475 kHz	2200-0000z	01 Dec 96-28 Feb 97
9475 kHz	2300-0100z	01 Mar 97-30 Mar 97
15,685 kHz	1100-2200z	01 Dec 96-28 Feb 97
15,685 kHz	1100-2300z	01 Mar 97-30 Mar 97

*3215 to 3210 kHz frequency change is at 0505z Monday through Friday and at 0500z on Saturday and Sunday.

WWCR 2 - 100 kW - 85 Degrees

Frequency	Time	Dates
5935 kHz	0100-1300z	01 Mar 97-30 Mar 97
5935 kHz	0100-1400z	01 Dec 96-28 Feb 97
13,845 kHz	1300-0100z	01 Mar 97-30 Mar 97
13,845 kHz	1400-0100z	01 Dec 96-28 Feb 97

WWCR 3 - 100 KW - 40 Degrees

Frequency	Time	Dates
5070 kHz	2200-1200z	01 Dec 96-28 Feb 97
5070 kHz	2300-1200z	01 Mar 97-30 Mar 97
7435 kHz	1200-1500z	01 Dec 96-28 Feb 97
7435 kHz	1200-1500z	01 Mar 97-30 Mar 97
12,160 kHz	1500-2200z	01 Dec 96-28 Feb 97
12,160 kHz	1500-2300z	01 Mar 97-30 Mar 97

WWCR 4 - 100 KW - 90 Degrees

Frequency	Time	Dates
2390 kHz	0100-1100z	01 Dec 96-28 Feb 97
2390 kHz	0200-1100z	01 Mar 97-30 Mar 97
7435 kHz	2200-0100z	01 Dec 96-28 Feb 97
7435 kHz	2300-0200z	01 Mar 97-30 Mar 97
9475 kHz	1100-2300z	01 Mar 97-30 Mar 97
9475 kHz	1400-2200z	01 Dec 96-28 Feb 97
12,160 kHz	1100-1400z	01 Dec 96-28 Feb 97
12,160 kHz	1100-1400z	01 Mar 97-30 Mar 97

Note the move to 5070 kHz (from tional 5065 kHz) for transmitter No actually took effect back on October

Switzerland

This part of the world is we transmissions from **Swi 96 International**, as this excerpt schedule demonstrates:

To Australasia:

Time	Frequency	Relay
0830-0900z	9885 kHz	UF
0830-0900z	12,075 kHz	
0830-0900z	13,685 kHz	GUF
0900-0930z	9885 kHz	
0900-0930z	12,075 kHz	
0900-0930z	13,685 kHz	GUF
0930-1000z	9885 kHz	
0930-1000z	12,075 kHz	
0930-1000z	13,685 kHz	GUF
1000-1030z	9885 kHz	
1000-1030z	12,075 kHz	German
1000-1030z	13,685 kHz	German
1030-1100z	9885 kHz	Portuguese GUF
1030-1100z	12,075 kHz	Portuguese
1030-1100z	13685 kHz	Portuguese

Far East:

Time	Frequency	Language	Relay
1100-1130z	9885 kHz	English	
1100-1130z	12,075 kHz	English	
1100-1130z	13,635 kHz	English	
1130-1200z	9885 kHz	French	
1130-1200z	12,075 kHz	French	
1130-1200z	13,635 kHz	French	
1200-1230z	9885 kHz	German	
1200-1230z	12,075 kHz	German	
1200-1230z	13,635 kHz	German	
1230-1245z	9885 kHz	Italian	
1230-1245z	12,075 kHz	Italian	
1230-1245z	13,635 kHz	Italian	
1300-1330z	9885 kHz	English	CHN
1330-1400z	9885 kHz	French	CHN
1400-1430z	9885 kHz	Italian	CHN
1430-1445z	9885 kHz	German	CHN

Relays:
GUF: Guiana, French Guyana
CHN: Beijing, China

Sweden in English

Radio Sweden is another station to make frequency changes on October 27. Its external schedule now reads thus:

To Europe and Africa

1500 on 1179, 6065, 7240, and 9655 kHz
1700 on 1179 and 6065 kHz
2000 on 1179, 6065, and 7230 kHz (weekdays only)
2200 on 1179, 6065 and 7325 kHz

To North America

0000z on 6200 kHz (East Coast)
0300z on 7155 kHz (West Coast)
0400z on 15,240 and 11,650/13,740 kHz
(Swedish Telecom refuses to decide, and the channel can change from day to day!)
0530z on 15,240 and 9885/11,650 kHz

To Latin America

0030z on 6065 kHz
0130z on 7265/7290 kHz

To Asia/Pacific

0130z on 7265/7290 kHz
1330z on 7155 and 13,740/15,240 kHz
1430z on 9485 kHz

New AWR facility planned

According to a press release, **Adventist World Radio** received a long-awaited license from the Italian Ministry of Post and telecommunications a few weeks back.

The license gives AWR the opportunity to build a major shortwave station near Argenta, Italy.

The broadcast facility will provide coverage of the nations from Morocco in the west to Pakistan and India in the east. The new station will complement AWR's shortwave station on Guam, says AWR president Gordon Retzer.

More than 30 languages are scheduled to be broadcast from the Argenta complex, including several new ones for AWR, such as Turkish, Kazakh and Uzbek. AWR already broadcasts in Arabic and Farsi (both of which are spoken in Iran).

... ☞

AWR has sought lega uthorisation for broadcasting from Italy si e 1985, when it established a small short ve facility near Forli. "This long-anticipate cense permits AWR to own and operate own facility in Europe," says Retzer. "This h een an objective since AWR first started b casting from leased facilities in Portugal in 1."

Construction of the new st is expected to commence in 1997, wi expected on-air date of 1999.

New segment goes ir

Those interested in the Nor merican broadcasting scene will be plea know that **Radio for Peace Inter nal** in Costa Rica is now featuring an ex d version of Glenn Hauser's 'World of once a month.

The additional 15 minutes is entitled 'Continent of Media' (COM), and deals with media developments in North America. Exact dates have not been set, but expect this to be around the middle of each month.

The times for the broadcast are: Saturdays 0430, 1130, 1830z, Sundays 0230, 0930, 2330z, Mondays 0730z, Tuesdays 1930z, Wednesdays 0330, 1030z. RFPI frequencies are: 6200/6205 kHz 0000-1300z (USB), 7385 kHz 2200-1700z, 15,050 kHz 1300-0000z.

See you next year! Have a good break...

News in brief

• **Radio Miami International**, **WRMI**, began regular broadcasts in Portuguese on October 13. The new weekly one-hour block airs on Sundays at 2130-2230z on 9955 kHz.

• Regular listeners to the bands will have noticed a new tuning signal (a short musical piece played for a few minutes prior to the beginning of a transmission) in their travels. **Voice of Russia** has dropped 'Midnight in Moscow' after many years, and adopted an extract from the piano suite 'Pictures at an Exhibition', by 19th century Russian composer Mussorgsky.

• Despite claims by some that medium wave DXing is virtually extinct, die-hard enthusiasts in this country continue to graft away, and with a bit of persistence, often net some interesting long-haul catches. The writer recently spent a week at Merimbula on the NSW far south coast, and with a very modest setup (100 metre long-wire) in an electrically quiet location, managed to hear approximately 40 or so US and Canadian medium-wave broadcast stations with very little effort.

There was no attempt to document these, radio listening not being one of the priorities of the trip, but it just goes to show that even with the proliferation of 24-hour domestic operations, it is still quite easy to do some useful work if one is able to get out of town a bit. Specialised antenna configurations, such as a Beveridge (generally several hundred metres in length) will display distinct directional qualities, thereby eliminating a lot of the local QRM, and enabling some spectacular catches on a good night.

The new extended band above 1600 kHz is providing some interest, with a few US stations beginning to appear in this range. Some relatively new Australian stations are also heard in this part of the band, some of these catering for ethnic communities.

• Widely reported by overseas DXers is the reactivation of **La Voix du Zaire**'s shortwave transmitter on 15,245 kHz. This one used to be semi-regular in Australia during our local afternoon period, on this and another 19 metre band channel, 15,350 kHz. Neither has been heard in many moons. Check 15,245 kHz after 0500z. Programming will be mostly in French.

• According to a report on **Radio Nederland**'s 'Media Network' segment, **Radiotelivisione Italiana**'s main shortwave complex near Rome is currently operating with power restrictions due to encroaching residential development, which is not seen as compatible with a high-powered transmitting site. In recent years RAI has been busy building up a satellite and rebroadcast network for Italian expatriates, but has no plans to abandon shortwave. The French company Thompson CSF has apparently been awarded a contract to supply 500 kW shortwave transmitters, to be placed at an entirely new site. Developments are awaited!

US Evangelist Dr Gene Scott has yet, at the time of writing, to get his new ortwave station on the Caribbean island of Anguilla up and running. Dr ott's University Network has for some years owned the **Caribbean Beacon** ion on 1610 kHz (often heard in Australia (0700-0900z) and almost immedi- after its acquisition announced plans to add shortwave coverage from the d. The last report I heard indicated that a 100 kW transmitter was in fact in on Anguilla, and all the necessary studies and surveys have been carried ermission is reportedly still awaited from the local government before asts can commence in earnest.

pproach of the warmer months also heralds earlier reception of African in the hours after midnight (Eastern time). Stations in East Africa Uganda, and others in that region) should become available on 60 rom as early as 1300z, and on 90 metres an hour later. Check out enya on 4934/6150 kHz, and Kampala, Uganda on 5027 and 3340 kHz. arly one is **Radio Candip** in Zaire, a low-powered operation on 3390 Hz. Look for this one after 1430z. Madagascar makes for interesting ut jumps frequency fairly often. The latest is 4960 kHz, but others are 3359 and 5010 kHz.

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Denmark

Erik Koie of **Radio Denmark** advises this schedule for the current transmission period (extracts only, showing favourable times for Pacific listeners):

0930-0955z Western Middle East on 15,220 kHz
Australia & South-east Asia on 13,800 kHz

1030-1055z SW Europe, West Africa, southern South America on 15,220 kHz
South America on 17,840 kHz

1130-1155z Europe on 7295, South America on 15,270 kHz

1230-1255z Europe on 9590
SE Asia, West Australia, Russia 15,605 kHz
Far East on 9910 kHz
Eastern North America on 11,840 kHz

1330-1355z Europe on 9590 kHz
SE Asia, West Australia, Russia on 15,605 kHz
Far East on 9910 kHz
E and Central North America, Greenland on 11,840 kHz

1430-1455z E and Central North America, Greenland on 11,840 kHz
South Asia (India) on 11,730 kHz

1930-1955z Europe on 5960 kHz
Western Europe, West Africa on 7485 kHz
Central and Southern Africa, New Zealand on 9590 kHz

2130-2155z South Europe, West Africa, Canary Islands on 7520 kHz
Australia on 7315 kHz
Eastern and Central North America on 7465 kHz

2230-2255z Far East on 6145 kHz
South America on 9840 kHz

2330-2355z South-east Asia, West Australia on 7275 kHz
South America on 5905 kHz
Central America, Eastern North America on 7465 kHz

0030-0055z South-east Asia, West Australia on 7275 kHz
South America on 5905 kHz
Central America, Eastern North America on 7465 kHz

0630-0655z Europe on 5965 kHz
Western Europe, West Africa, New Zealand on 7180 kHz
Central and Southern Africa on 11,735 kHz
Western Middle East on 9590 kHz

0730-0755 Europe, New Zealand on 9590 kHz
Western Europe, New Zealand on 7180 kHz
Western Africa on 11,720 kHz

0830-0855z Far East on 9580 kHz
Australia, South-east Asia on 13,800 kHz

A new station hits the airwaves

Radio Free Asia, the latest US 'surrogate' station, commenced broadcasting just after the editorial deadline for the last edition of Radio & Communications. RFA was established under the US International Broadcasting Act of 1994 and transmitted its inaugural program, in Chinese, on Sunday, 29 September.

As we mentioned in last month's column, up until the very last moment there were severe doubts about RFA's capacity to begin broadcasting; countries in the Asian region that had been proposed for hosting the station's transmitters got cold feet at the prospect of incurring the wrath of China, whose Communist administration is no doubt destined to become the subject of many RFA editorials. Thailand and the Philippines, in particular, were understandably reticent about jeopardising valuable trade contracts with their giant neighbour. Behind the scenes, however, RFA was quietly negotiating with other broadcasting organisations, which although not all optimally placed for delivery of a premium signal in the target area, were prepared to let commercial considerations win the day.

The countries chosen are the former Soviet republics of Kazakhstan, Armenia and Tadjikistan, in addition to the Pacific island of Saipan, in the Northern Marianas group. The latter relay site is perhaps the most interesting, as it is none other than KHBI, of Monitor Radio fame. This facility is owned and operated by the Church of Scientology, which has been experiencing some financial problems in its media arm over recent months.

Initially, a half-hour program in Chinese is aired at 2300z, repeated during the following half-hour and again at 1500z for evening reception in China. RFA's Chinese-language broadcast will eventually expand to five-and-a-half hours per day, seven days a week.

Radio Free Asia is a quasi-governmental corporation which is funded by grants authorised by Congress to broadcast to China, Burma, Laos, Cambodia, Tibet, Vietnam and North Korea. Its mission, as defined by Section 309 of the 1994 US International Broadcasting Act, is "...to provide accurate and timely information, news, and commentary about events in the respective countries of Asia and elsewhere; and to be a forum for a variety of opinions and voices from within Asian nations whose people do not fully enjoy freedom of expression..."

Under an arrangement with sister stations Radio Free Europe/Radio Liberty, RFA will initially broadcast from RFE/RL studios in Washington. RFA President Richard Richter, formerly executive producer for the ABC 'Evening News' and later executive producer at WETA TV in Washington, said that the new broadcaster will move into its own Washington studios and start broadcasts in Tibetan and Burmese later this year. Other languages are expected to follow in the first half of 1997.

RFA's signal is routed through the transmission facilities of the US Information Agency's International Broadcasting Bureau (the USIA's IBB!) at Voice of America headquarters in Washington. From there it is sent via satellite to the various relay stations overseas. Evidence of this arrangement was apparent in the very early days, where VOA-Europe broadcasts accidentally appeared on Radio Free Asia's scheduled frequencies due to a switching error.

RFA will rely on a large number of regular and freelance correspondents throughout Asia for its news coverage, including special correspondents in Tokyo, Taipei and Seoul. It will have permanent news operations in several Asian cities, including Hong Kong.

In its report to Congress last year on the establishment of a new broadcasting operation to Asia, the Broadcasting Board of Governors had proposed the name **Asia Pacific Network**. However, in keeping with the wishes of Congress, the official name, **Radio Free Asia**, will be used from now on.

According to the composite VOA/RFE/RL transmission schedule, RFA operates on the following frequencies:

Frequency	Time	Site	kW	Degrees
6240 kHz	1500-1600z	Kamo, Armenia	100	065
6240 kHz	2300-0000z	Kamo, Armenia	100	065
7495 kHz	1500-1600z	Dushanbe, Tadjikistan	500	087
7495 kHz	2300-0000z	Dushanbe, Tadjikistan	500	071
7530 kHz	1500-1600z	Dushanbe, Tadjikistan	500	071
7530 kHz	2300-0000z	Dushanbe, Tadjikistan	500	087
7550 kHz	1500-1600z	Alma Aty, Kazakhstan	500	094
9455 kHz	1500-1600z	Agingan Point, Saipan	100	310
13,800 kHz	2300-0000z	Agingan Point, Saipan	100	310

The address for correspondence is:
Radio Free Asia,
1201 Connecticut Avenue Northwest,
Washington DC 20036
United States of America

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When you reckon you have the answers sorted out, send your entry to Yaesu FT-50R Competition, Radio & Communications, ACP-Syme Magazines, PO Box 119, Oakleigh, Victoria 3166.

Entries must be received by November 30, and the winner will be notified and his/her name published in the January 1997 issue.

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Gone Tropo

from Chris Davis, VK1DO

One of the unusual aspects of amateur radio, today, is the ease with which stations can be taken mobile. In my formative years, when valve equipment was still very dominant in the VHF arena, the equipment was extremely cumbersome, weighing in at a solid figure.

This would, apart from finding no accommodation under the dashboard of a modern car, be sure to reshape the lustrous curves of any contoured cabin that you were brave enough to screw things to.

These ex-carphones as we called them, even though in today's modern cellular and digital age they were about as much like a phone as a living room radiogram is like a Walkman.

They were generally ex-taxi or trucking two-way systems which, upon being upgraded to more compact, less power-hungry models or having their frequency of operation changed, were available on the disposals market for tuppence-ha'penny — and tha, for the younger readers, ain't much.

Strangely enough, the engineering quality and efficacy of design were extremely impressive and, in most cases, with relatively simple conversion — ie a change of crystals, perhaps just a realignment of the receiver front end, possibly with the alteration of a coil here and there — you had a pretty stylish FM or, in some cases, AM transceiver.

These units, if they were totally valve, could wipe the smile off a freshly-charged car battery as quick as a flash. With half a dozen valves in the receiver and some pretty greedy heaters in the transmitter chain, the whole affair was pretty much only suitable for operation while the engine was running.

"...So why am I telling you all this? Not to brag about my mobile set-up, but...!"

The requirement for high voltage (ie two or three hundred volts for the receiver stages and transmit chain with a bit more herbs for the output stage) saw some interesting innovations in terms of step-up power supplies.

The earliest efforts borrowed from the same crude technology which was still around in car-radio receivers up until the early '60s. This system was called a vibrator power supply.

The system used a solenoid-based interrupter to emulate alternating current using pulsating direct current on the primary of the step-up transformer.

The term 'vibrator' was certainly well named, as the radio or transceiver often emitted a loud and clear signal indicating the state of operation.

At traffic lights the transmit power would readily fall as the low alternator/generator voltage would fall below the critical level to maintain adequate operation under load.

These systems were eventually replaced in the hybrid rigs where the receivers were fully solid-state and the transmitter high voltage was produced by solid-state invertors operating at much higher frequencies such that transformer cores were lighter and more efficient, a practice that still abound in aircraft power supplies.

Despite the technical innovation, the practise of going mobile was still a far cry from popping a rig temporarily on the seat, banging a mag base on the roof and a shoving cigar lighter plug into the dashboard.

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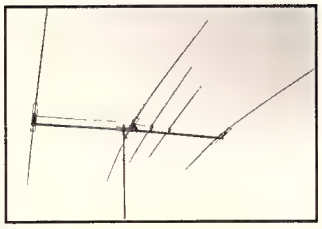

TE-13 3-band rotatable dipole **$230**
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TE-14 4-band rotatable dipole.....**$325**

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1-ele on 7MHz.....**$930**

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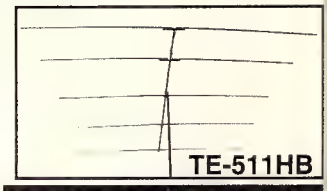

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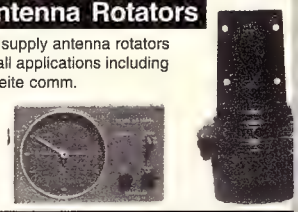

Gone Tropo

from Chris Davis, VK1DO

Even the hybrid rigs were as big as a couple of substantial encyclopaedias stacked together, and the decision to install a radio required either a very co-operative spouse or some deceptive sleight of hand when they weren't paying attention. In most cases, the space the rig was likely to occupy was the space the passenger might have previously enjoyed for their knees!

The rigs were big, the risks of flat battery were high and the versatility, despite the low cost, was very, very low. Most early rigs had provision for a few channels at best and definitely no option other than the one mode.

The receivers, might I just concede, were so close in sensitivity to today's rigs that it wasn't funny but in terms of rejection of strong signals, most were by far superior. Having a rig capable of much more than 10 watts was considered pretty flash.

Having deserted the ranks of the car-phone user, what do I go mobile with these days? I have the luxury of one of these DC-to-daylight type devices with all the HF bands on hand with the help of an automatic tuner and obtrusive whip on the bull-bar. *(What, an FT-767GX? Nah, just kidding...)* Six metres has a full quarter-wave vertical and two metres has the option of a quarter-wave or a halo.

The car looks terrible to non-radio types, but a veritable mobile antenna farm to the amateur types. (In truth, with a quarter-wave for UHF and another antenna for the mobile-phone it really looks superbly idiotic, but people tend to give you a really wide berth!)

Yes, it is a mobile porcupine but the efficacy of the interior is really something to behold. The box of tricks which does the business is bolted under the driver's seat, and all that is visible is the flat, removable front panel, neatly mounted on the car's console looking more like a slightly over-weight car radio front panel.

"...they were about as much like a phone as a living room radiogram is like a Walkman..."

Why am I telling you all this? Not to brag about my mobile set-up, but just to suggest how much more simple the whole challenge is today. A bit of time taken to install one of these modern wirelesses and some appropriate antennas and you will have the world of mobile open itself up to you.

Listening to the HF channels is certainly fascinating finding out what areas have the lowest noise floors and best propagation.

Driving past certain buses and being clobbered by their telemetry signals or sitting at the traffic lights and being wiped out by someone's noisy old VW or P76 with copper spark plug leads, can be a real eye-opener in terms of the man-made noise we have to endure. Even so, on some occasions I have heard stations on 144MHz from some four or five hundred kilometres away. On six metres I have worked VK7, VK5, VK4 and ZL just while running around the town on business.

If you have contemplated an attempt at mobile operation but didn't know which rig or band to concentrate on, now is the time to test the water on whichever band you wish.

It's never been easier — and your partner, if you are quiet about it, will probably never even notice the vanity mirror in the glove-box being replaced by the control panel of the radio.

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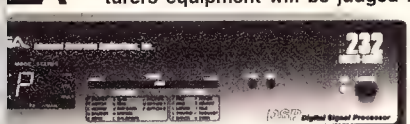

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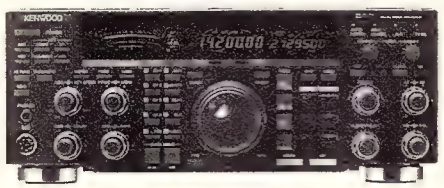

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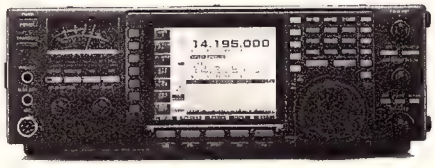

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Baudwalking: A Look Back... part 2

By Thomas R. Sundstrom, W2XQ, trs@trsc.com

A full year has passed since Tom took over the Baudwalking column. He has clearly enjoyed digging through the bits and bytes finding new and interesting radio and communications sites on the Internet. This compilation summarises the World-Wide Web, FTP and Gopher sites he has reviewed in just the last six months... The first part of this index of articles appeared in last month's issue.

Here is a listing of all the WWW, FTP and Gopher sites visited by Baudwalking in the last six months.

The first column is the title of the site or the subject covered there. The second column is the internet address, while the third column shows the Radio and Communications issue. The first six-month summary appeared in the May 1996 issue of Radio and Communications. If you missed an issue, back copies may be ordered from (03) 9567 4200.

Sites do disappear or move. Remember to watch the punctuation, special characters and case when entering the URLs. We have rechecked most of these links, but if you find something broken or missing try one of the search engines to locate the new address. And let us know your findings... Please direct comments and suggestions on this compilation to the editor of Radio and Communications, PO Box 622, Mount Eliza 3930. Enjoy.

Miscellaneous

Australia Weather Page Links	http://www.vision.net.au/~tech/weather.html	Oct 96
Bendigo Sideband Radio Club	http://www.bendigo.net.au/~jamesrs/bsb.htm	Aug 96
Beverage, Harold H.	http://engine.ieee.org/history_center/oral_histories/transcripts/beverage1.html	Oct 96
Boatanchors WWW Page	http://www.mindspring.com/~johnmb/	Oct 96
Carpet loop antenna	http://www.shore.net/~dmoisan/faqs/carpetloop.html	Jul 96
Cedar National Address Server (USA postal ZIP codes)	http://www.cedar.buffalo.edu/adserv.html	Jul 96
Conversions (metric et al)	http://www.eardc.swt.edu/cgi-bin/ucon/ucon.pl	Oct 96
CSIRO weather sat page	http://www-ocean.ml.csiro.au/programs/tech/remote_sensing.html	Jul 96
Greenwich, England, Celebration	http://www.greenwich2000.com/	Aug 96
Herrold, Charles	http://www.ksjs.org/adams/adams3a.shtml	
	http://www.kteh.org/prod/docs/docherrold.html	Nov 96
ID Logic	http://www.prs.net	Aug 96
IEEE Center for the History of Electrical Engineering	http://engine.ieee.org/history_center/	Oct 96
Indonesian Radio on the Net	http://www.hway.net/syahreza/	Nov 96
Information Age: People, Information & Technology	http://photo2.si.edu/infoage.html	Nov 96
Internet with an Accent	http://www.accentsoft.com/	Oct 96
Java Grayline Map	http://www.infi.net/~dharvey/grayline/grayline.html	Jun 96
Kochi University, Japan	http://www.is.kochi-u.ac.jp/weather/index.en.html	Jul 96
KRUD (radio paraody)	http://www.krud.com	Oct 96
Media History Project	http://www.mediahistory.com/	Sep 96
Old-Time Radio FAQ	http://www.old-time.com/ffiles/otr.faq	Nov 96
On Top of the World®	http://www.tiac.net/users/hlynka/	Sep 96
Original Old Time Radio WWW Pages"	http://www.old-time.com	Nov 96
Radio Netherlands' Receiver Shopping List	http://www.rnw.nl/en/pub/rxshop/rx_index.html	Aug 96
RadioSat	http://www.radiosat.com/radiosat/	Jul 96
Stroud's Consummate Winsock Applications	http://www.cwsapps.com/	Oct 96
The Farnsworth Chronicles	http://www.edge.net/noma/philo/	Nov 96
Today's Calendar and Clock Page	http://www.panix.com/~wlinden/calendar.shtml	Nov 96
Tommy's List of Live Cam Worldwide	http://www.rt66.com/~ozone/cam.htm	Nov 96
URL-minder	http://www.netmind.com/URL-minder/URL-minder.html	Jul 96
US Postal Service	http://www.usps.gov/ncsc/	Jul 96
Wolfman Jack	http://www.stinky.com/wolfman/	Sep 96

Propagation

HF Propagation Prediction. MUFsight	http://www.ibmpcug.co.uk/~g4sgi/mufsight/mufsight.html	Jul 96
Hiraiso Solar Terrestrial Research Center/CRL	http://hiraiso.crl.go.jp/	Aug 96
NASA's "The Exploration of the Earth's Magnetosphere"	http://www-spof.gsfc.nasa.gov/Education/Intro.html	Aug 96
NOAA's "Solar Terrestrial Physics"	http://www.ngdc.noaa.gov/stp/stp.html	Aug 96
"The Solar Guide"	http://www.rnw.nl/en/pub/solargui.html	Aug 96
Natural Radio	http://www-pw.physics.uiowa.edu/mcgreevy/	Aug 96

SWL

Agence France-Presse	http://www.afp.com/	Sep 96
Agenzia ANSA (Italy)	http://www.ansa.it/	Sep 96
Anadolu Ajansi (Turkey)	http://www.metu.edu.tr/AA/	Sep 96
AOR 7030 Review by Atkins	http://espresso.ts.uvic.ca/aor1.htm	Nov 96
Asociación Española de Radioescucha	http://www.lander.es/~sedano/	Sep 96
Association of North American Radio Clubs	http://www.anarc.org	Jun 96
Benelux DX Club	http://www-dx.deis.unibo.it/htdx/swls/bdxc.html	Oct 96
Broadcaster Addresses & QSL Info	http://acorn.educ.nottingham.ac.uk/SchEd/pages/radio/welcome.html	Sep 96
Clandestine Stations Page	http://up4c03.gwdg.de/~kuhl/cla	Jul 96
Classic SWBC QSL Home Page	http://www.avana.net/pages/personal/k6eid/index.html	Oct 96

Digital Signals FAQ	http://www.leonardo.net/berri/wun/files/digfaq/signals.html	Sep 96
DX Network Club (India)	http://www.cyberspace.org/~babul/radio.html	Jun 96
Free Radio Network	http://www.access.digex.net/~cps/sss.html	Jul 96
Indian News	http://www.meadev.gov.in/news/menu.htm	Nov 96
International Radio Club of America	http://fly.hiwaay.net/~waholler/irca.htm	Sep 96
ITAR-TASS (Russia)	http://www.itar-tass.com/	Sep 96
Mark Veldhuis' SWL pages	http://www1.tip.nl/users/t103569/	Oct 96
Medium Wave Circle	http://www.geocities.com/Hollywood/5613/mwc.html	Oct 96
Michigan Area Radio Enthusiasts	http://www.detroit.freenet.org/sigs/radio/	Nov 96
Michigan Area Radio Enthusiasts, Inc.	http://detroit.freenet.org/sigs/l-radio/	Jul 96
NIST Time and Frequency Services	http://glen-ellyn.iit.edu/~clocks/clocks/nist/nistpub/sp432/sp432.html	Sep 96
Panafrican News Agency (Senegal)	http://www.nando.net/ans/pana/	Sep 96
Patepluma International Radio Web Site	http://www.mcrest.edu/~moore/patepluma.html	Jul 96
Pirate radio in Canada	http://www.speedline.ca/~glen/	Sep 96
Polska Agencja Prasowa (Poland)	http://www.pap.waw.pl/	Sep 96
Press RTTY services	http://www.ponton.uni-hannover.de/ponton/benjamin/	
	ftp://ftp.ponton.uni-hannover.de/pub/ticker/	Jul 96
Radio First Termer	http://sunsite.unc.edu/jwsnyder/rft/rft.html	Sep 96
Radio Graffiti Board	http://espresso.ts.uvic.ca/	Nov 96
Radio Waves International	http://www.imaginet.fr/~rwaves/index.htm	Sep 96
Raimo Mäkelä's Tropical Band List	http://www.zynet.com/~johnb/	Sep 96
Remy Friess' list of French broadcasts	http://persoweb.francenet.fr/~tsfinfo/franc.html	Sep 96
Rensen's HF FAX List	http://ourworld.compuserve.com/homepages/HFFAX/hf-fax.htm	Sep 96
shortWWWave	http://ariel.ucs.unimelb.edu.au/~pbd/SW/index.html	Jun 96
Sparky's Maritime Radio pages	http://rampages.onramp.net/~rangerj/	Nov 96
Tiawan Central News Agency	http://www.cna.com.tw/	Aug 96
United States Coast Guard High Seas Maritime Telecommunications	http://www.dot.gov/dotinfo/uscg/pacarea/camspac/MarineHome.html	Sep 96
WFLA, Tampa, Florida, USA	http://www.970wfla.com/home.html	
	http://pages.prodigy.com/wfla97c/	Jul 96
World Radio Communications Monitoring Station	http://www.microagewny.com/home/caesar/wrcms.html	Aug 96
Worldwide DX Club	http://ourworld.compuserve.com/homepages/wwdxc/	Jun 96
WWV & WWVH	http://physics.nist.gov/GenInt/Time/boulder.html	Sep 96
Yugoslavia Daily Summary	http://www.yugoslavia.com/News/YDS.htm	Aug 96
Zacharias Liangas (Greek pirates)	http://www.compulink.gr/Users/zliangas/central.htm	Oct 96

Boy, it sure pays to subscribe!

We recently ran a special competition, open only to new and renewing subscribers, offering the chance to win a real mountain of gear. Our winner, a delighted amateur radio operator, has chosen this heap of gear — a complete station!

The very lucky winner is ...

Neil Fallshaw, VK2XNF, of Faulconbridge, NSW

Of course, *all* who entered are the real winners — you get one or two years of your favourite **Radio and Communications** magazine home delivered at a very special rate. Of course, you can still subscribe. See the coupon on **Page 91**!

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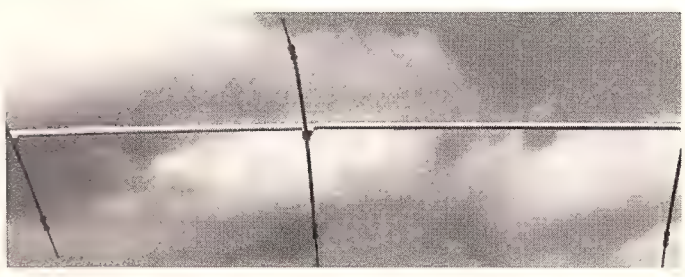
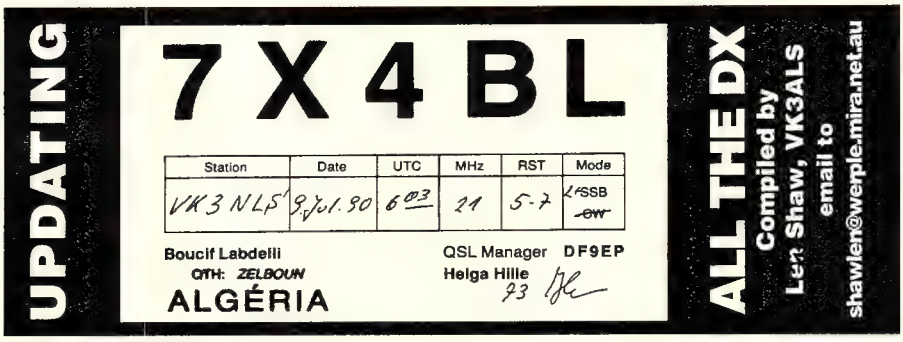




The following information was obtained from a number of sources, including the Shortwave Possums BBS with on-board credit to OPDX/BARF80 (Ohio/Penn DX Bulletin) with thanks to the ARRL, Northern Ohio Amateur Radio Society, Northern Ohio DX Association, Ohio/Penn PacketCluster Network, K4CEF & South-eastern Cluster Group, DJ5JH, DJØWO GØGWA, Z32GX, KN4F, AH6MM, KQ8M, KB8NW, KL7A and WB9OTX. It has been edited to omit specific USA-only interest. R&C wants to supply the best and latest DX information available (as we believe we already do, thanks to Jim Smith, VK9NS!). We welcome regular input from VK and ZL stations, particularly from net controllers on a basis of heard/worked. Please fax Len Shaw, VK3ALS on (03) 9775 2575 (during business hours) to have your info included in this section.

C5, The Gambia

A few weeks ago, OPDX mentioned that Gary, C53HG had left The Gambia for Namibia. Paul, VE3JLP, who is DX editor of *The Canadian Amateur*, states that we may begin to see a lack of activity from C5 now.

Paul reports, "My daughter, who taught at the Gambia College of Agriculture at Brikama 18 months ago, tells me that the science teacher there — who occasionally put the college station, C53GCA, on the air — has now moved on to a new job and this station is likely, from now on, to be gathering dust! By the way, the college station is the one I briefly put on the air in February, 1995, it was installed by a group of VE1s a year or two before. I don't *think* there are any other resident stations in C5, so it may soon become a pretty rare DX."

FH, Mayotte

Denise, F6HWU, will be active as FH/F6HWU from November 9-27. She will be operating mostly CW on all bands, and there may be some activity on RTTY.

FR/T, Tromelin

FR5ZU/T was heard recently on 15 metres (21,215 kHz around 1545z). His length of stay is unknown at this time. QSL via FR5ZU.

Indian Ocean DXpedition update

About the 3B9 operation... there is very bad news — at the present time there is *no* chance for a 3B9 license. On Reunion Island, they will use the CEPT license as announced. You can read about this DXpedition on the WEB page: http://www.ctv.es/USERS/ea3bhk/dx/indic.htm

OZ, Roemoe Island (Denmark)

Ulli, DL2HEB, will be using OZ/DL2HEB/p on IOTA EU-125. His IOTA DXpedition will be from December 22 to January 3, 1997. Activity will be on 80-10 metres. Check the IOTA and QRP frequencies, especially on CW, 14,040 and 14,060 kHz. QSL via DL2HEB or via the bureau.

Not the QSL manager...

F2YT has received some QSLs for **D44AB**. He is not the correct QSL manager. F6EDZ, meanwhile, has received QSLs for **3B8DZ**. He is not the correct QSL manager for that station either!

V5, Namibia

KYØA arrived in South Africa at the end of October, and from there he is planning to make another trip into Namibia. He wants requests that if anyone hears V5/ZS6YG, please QSL *only* to KYØA. Do not use the South African QSL Bureau!

Charlie will be mostly mobile with 500 watts and antennas for the low bands and WARC bands. His operation will be on CW only.

VKØ Heard Island DXpedition update

Carl Smith, N4AA, editor of *QRZ DX*, recently reported that, on October 10, a shipping container containing gear and life support equipment for 20 people left Oakland to be shipped Reunion Island, the departure point for this very large DXpedition to Australia's only active volcano on Heard Island.

The team will assemble on Reunion Island during the last week of December.

On January 3, 1997, the team will board the 300ft French vessel *Marion Dufresne* for a 10-day sail to Crozet and then to Heard Island.

The stations will come on the air on or before January 15, using the callsign VKØIR. The total budget for this DXpedition is $320,000.

XU, Kampuchea (Cambodia)

There was a report that JR1CSA and JA1SBH were active during early October as XU1U and XU1AO.

Operations took place from Battambong, in the north-west part of Cambodia, and the JA ops made 500 QSOs, mostly with Europe. QSLs should be sent to the individual operators.

9N, Nepal

The ARRL DX Bulletin reports that Jack, W4OSN, will be active as 9N1OSN from Kathmandu on 80 through 15 metres from October 14 to November 28. He will be using a solar-powered Ten-Tec Scout.

QSL news and information...

• The new QSL Manager for the DP1KGI DXpedition to Ardley Island (South Shetlands) is DL5EBE. Those who did already send a QSL to DL7VTS (ex. DD6UAB) will not have to send a new card.

All cards received via direct or via bureau will be answered soon. DP1KGI was the first and the last activity from the German Antarctic Station *Ardley*. The station, originally established by the Academy of Sciences of the GDR, was taken over from the Alfred Wegener Institute for Polar and Marine Research. The station had to be closed last year to keep the regulations of the Antarctic Contract signed by Germany.

• F5TCN has received the logs for YA9XL, but only for the December 1 to 24, 1995 period. He is still waiting for the logs after December 24.

• Jean Michel, F6AJA, reports Gerard, F2JD/5R8EN, has closed down his station from Malagasy and returned to France at the end of October with the last part of his log. Gerard will be going to Panama (HP) November 20, for at least six months.

• Jean Michel, F6AJA, reports he has received his 5R8FI QSL cards from the printer, and all direct request will be mailed very soon.

• F6BUM has been receiving QSLs for TO5A for February 1996. He has the logs only for the July '96 operation.

• Dave, W7KJJ/6, has reported that over the past few years he has been mistaken for and has received cards for a CEØ-San Felix operation. He states that he has been rather inactive over the past couple of years, but recently received a batch of cards from the W7 bureau which had a couple more cards from Europeans asking for CEØ cards.

• Dragan, ET3YU, reports his mission in Ethiopia is about done and that a new QSL route will be used instead on the one in Addis Ababa. Cards for ET3YU should now be sent to Dragan's new address: Dragan Stojanovic, Dusana Vukasovica 82/20, 11070 Novi Beograd, Yugoslavia. Dragan reports he has only exchanged about 4,000 QSLs out of 14,000 QSOs.

• F5NZO reports he has received the log from FT5XL for between February 13 and September 1. He will reply for all direct request as soon as possible.

• Chris, ZS6EZ, reports that the ZS8IR cards have finally been printed and are being shipped to him. He also has full logs on his computer. The first batch were expected to

go out in late October and he will then proceed to work down the remaining cards in batches, roughly corresponding to the month in which they were received.

Those few that sent registered mail will be in the back of the queue, and will get answered with the bureau cards, as Chris has to take leave and drive to the post office (about 15 miles) during office hours to collect the registered mail.

• Eugene, RN9XA (ex UA9XAC, R9X), from Syktyvkar, Russia, states there have been problems receiving QSL cards from USA QSL bureau. His new callsign is RN9XA (prefix RN9 - Asiatic Russia, not - UN).

He has been active in 1996 as many special stations from the Komi Republic: UE9XAA via UA9XC (OK via CBA or BUREAU), UE9XAC via RN9XA (OK via UA9XAC's CBA) and UE9XAD & UE9XYW via RA9XF (OK via CBA). His home address: Eugene V. Bugrimov, RN9XA, PO Box 1229, Syktyvkar 167001, Russia. E-mail address: rn9xa@ampr.komi.ru

• Maria, ZS1AFZ, reports that her new QSL address is: ZS1AFZ via KU9C (direct only SASE) to: Steve Wheatley, 12 Netherton Terrace, Morristown, NJ 07960, USA *or* Box 5953, Parsippany, NJ 07054, USA. Steve has an e-mail address too: ku9c@aol.com

• Juraj, OM2SA, indicated that he still has the log and QSLs for AP2MY, operated by N9NC in CQWW/CW '95, and a few days either side of this date. If anyone still needs a QSL, please send to Juraj via the bureau or direct to his address: Sipos Juraj, OM2SA, 93013 Trhova-Hradska 550, Republic of Slovakia, Europe.

T8, Republic of Belau (attention prefix hunters!)

Jim Hood, WV5S, president of the Oklahoma DX Association, has informed the DX/Contest community of the following: "In 1994, Belau (Palau) declared its independence from the USA. Consequently, the KC6 prefix needed to be replaced by a new unassigned prefix. The prefix T8 has been assigned to Belau. Oklahoma DX Association members N5OK and N5CG have now activated the T8 prefix for the first time as T88T. They will be using this call in both of the CQWW Contests. QSL to Box 88, Morris, OK 74445-0088.

9M2, West Malaysia

Tex, 9M2TO, reports that he has built and installed a 80/160 dipole, so begin looking for him on those bands. QSL via JA0DMV through the bureau or direct to: Terutsugu Izumo, Bukit Dumbar Apt. 9-4, 97 Jalan Thomas 11700 Gelugor, Penang Island, Malaysia

D2, Angola (update)

Alex, PA3DZN (aka 9X5EE, 9Q2L etc), has arrived in Luanda. He arranged a meeting with the PTT director, and has received the callsign D25L. However, he does not expect to be active soon, as his antennas and amplifier are still under way and are not expected to arrive for the next two to three weeks.

He does have his radio and keyer here, so he may string up a 40 metre dipole. However, he states it may not be worth going through the trouble because he will be leaving Luanda soon for a place called Menongue, which is in the southern part of the country. Meanwhile, he is hopeful the shipment will arrive in time so he can take all of his equipment at once to Menongue. QSL via PA3DMH.

FO, French Polynesia

Eric, F5CCO, will be on Tahiti during the months of November and December. He is there mainly on business, but he will be active on the weekends and if possible after work. He should be on the island November 15 and will stay for about four or five weeks there. Particular attention will be given for 80 and 40 metres. He currently does not know what his callsign will be but will receive it upon his arrival.

J3, Grenada

From November 16-26, a group from the Yankee Clipper Contest Club (YCCC) will be operating from here. Operators are as follows: J38AA - Ann/WA1S, J38AB - Paul/K1XM, J38AC - Al/W1FJ, J38AD - Joe/KM1P, J38AE - Charlotte/KQ1F and J38AF Rich/K2WR.

They will be operating in the CQWW CW Contest as a Multi/Multi entry with three stations (possibly four) with amplifiers at each station and monobanders on 10, 15, 20 and 40 metres. They will have wire antennas for 80 and 160 metres. Paul, KX1M, is trying to get a short call for the contest operation. Their backup callsign will be J38AA. All contest QSLs will be via Charlotte, KQ1F.

South China Sea activity

It has been reported to OPDX, that Bolon, BV5AF, President of CTARL & TAMSAT, states they have plans for BV9P, to be active late March, 1997, if the propagation is better. Also, they have plans to activate BV9S, on one of the big island of Spratly, named Equal Island, which is handled by ROC, Taiwan. This operation is scheduled to be on air two years later.

XZ, Myanmar DXpedition update

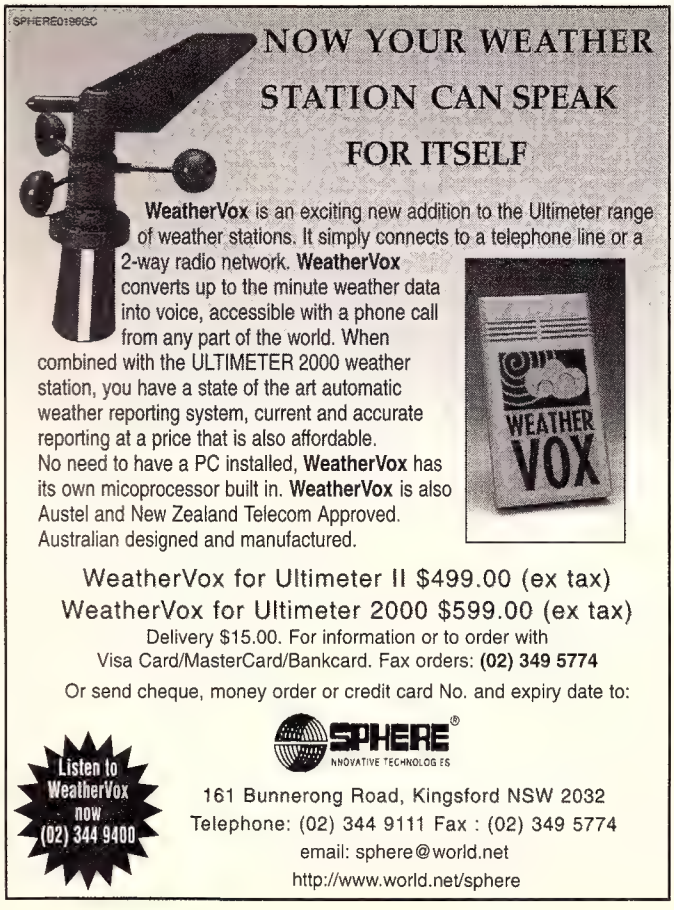
(Excerpts from a press release by Warren,KF7AY). The XZ1N DXpedition to Myanmar remains on course. Final approvals have been received and all but last minute details remain to be worked out.

This will be a large scale operation, with a chance for everyone to have this location in some new and exciting ways. The group will arrive in Yangon on November 16 and may even be active that evening. There will be a special event station running on November 18.

From November 19 through 22, three stations will be on all bands and most modes (CW, SSB and RTTY). On November 23 and 24, XZ1N will be active in the 1996 CQ World-Wide CW DX Contest as a multi-multi entry from zone 26. There will be some activity on November 25, just before everything is taken down.

The team departs for Bangkok on November 26. Participants OH1NYP, OH2BH, K5VT, KA5AYR, AB6ZV, N6BT, WA6CDR, AA7WP, KF7AY, N7WTU, WA7LNW and WY7K. QSL via W1XT (direct or bureau): Bob Myers, PO Box 17108, Fountain Hills, AZ 85269-7108.

The XZ1N web site has been updated with current information and can be found at: http://www.getnet.com/~kf7ay/ myanmar.html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Survey — effect of class licensing of CB

Following a discussion between ACBRO and the Spectrum Management Agency (SMA) in Canberra, an effort was made to seek the answers to several CB matters, particularly the effects and acceptance of the class license system that was recently introduced in Australia. This, you will recall, has all CBers (working stock standards) covered by a blanket license at no cost to them individually.

The approach by SMA stemming from such discussions called for a 'user perspective' of six prepared questions relating to this issue. It was thought that opinions from the executives of the ACBRO committee would suffice for the department's need, which generally appeared to establish acceptance of a change which had occurred with the licensing conditions affecting the CB community around Australia.

ACBRO showed some caution in speaking on behalf of the thousands of CBers around Australia whom they can claim to represent, and chose to seek comment from a sample of their counterparts in other parts of the country. They selected several others in the various states to share in answering the questions asked, with a view to gaining a better perspective with the knowledge that conditions and opinions vary in other areas for many reasons.

This proved to be a wise decision as, in fact, others did offer different opinions to those which were appropriate for the area around Adelaide, SA, where ACBRO is based.

The questions asked are presented in the following with the secretary's response given. And under the heading of 'others' is a sample of comments coming from respondents who had mailed back their answers by the nominated date. Hopefully more will have been received following the preparation of this report.

ACBRO in endeavouring to demonstrate a prompt response to the SMA forwarded on, initially, the Secretary's comments with those of several of the committee executive, with the promise that others would follow, which now has occurred. In reading the ongoing, it can be seen that many responses are in fact different to the opinions expressed by ACBRO, which underlines the fact that conditions in other parts of the continent are a variable prompting differing comment.

Readers may wish to observe how they would have answered the questions posed, and this may further stress this point.

Survey questions and responses

Q Did the introduction of the class licence affect operator behaviour? (Examples of possible answers: Behaviour generally improved; Behaviour deteriorated; No significant change.)

A No significant change, other than such as is qualified in the responses which follow:

Others: In South Australia others agreed, but in NSW and Victoria the comment was that behaviour had deteriorated, as was also the case in Western Australia, where one of two responses said "...the behaviour on air has deteriorated out of all proportion, with abuse and carriers dropped...".

Q Is there a general understanding in the CB community that licence conditions still apply to the use of CB equipment?

A Yes, for those who were previously licensed, but doubt exists that newcomers as users of the band are generally in possession of knowledge of the conditions. This situation will worsen if the matter is not addressed.

Others: In Adelaide, a simple yes answered this question, but elsewhere the opposite was the case, with no or diminishing knowledge being given. From Newcastle came this answer... "No. Many believe that CB has been de-regulated...", and from WA... "No understanding at all. When we try to tell the trouble-makers about the regulations, all we get is foul abuse."

Q What is the level of the CB community's knowledge about licence conditions?

A Very little. The flagrant abuse of laws of common decency apparent on city repeaters prompts others to assume that 'anything goes', and with no action being evident to overcome such behaviour, prompts observers and users of the service to assume that there aren't any conditions to which operators should abide.

Others: From Adelaide, one said 'not good', while another said "...The sensible people do have this knowledge. Idiots will always operate radios in the same manner as they would drive their motor cars." From Bunbury in WA a simple response said "...very little...", and another from Perth answered "...Mature CB operators acknowledge the license conditions, while the young new ones do not want to know."

Q Has the CB community's knowledge about licence conditions deteriorated since the introduction of the class licence?

A Yes. With the disappearance of old operators and the influx of the new who appear without being exposed to information which previously applying for a license would have created, it leaves a void which was anticipated when a CB class license was first mooted. Very few of the new operators would have heard of RB14, or any other documents that may have replaced it.

Others: Several comments from others in the ACBRO committee said 'No' with one extending the comment to "...but a little advice included with the sale of new equipment would not go astray..." In NSW, Victoria and one from WA, a resounding 'Yes' was the answer, with a further comment from Perth saying "...definitely deteriorated since licence fees were dropped in favour of a class license...".

Although not directly related to the introduction of the class licence, your comments in relation to the following question would also be appreciated.

Q What, if anything, should be done to promote appropriate use of CB frequencies and equipment?

A All and any awareness should be pursued. Some suggested means of creating this awareness may include:

Having appropriate literature available and distributed to the user of the service through

Dealers of CB equipment,

Clubs to include with new membership kits,

Advertisements in radio (particularly CB) magazines,

Regular press releases and statements proposing need for compliance to regs and notes of successful prosecutions,

Local Radio Inspectors being available to address (after hours) club meetings,

Important: At all CES offices, Council offices, Libraries, etc, information brochures offering

AUSTRALIAN ASSOCIATION OF CITIZEN and BAND RADIO OPERATORS Inc.

ACBRO INC

Trevor Colwell reports on the latest from ACBRO

help for most problems are displayed and available. Why not something like the old RB14 being also available with clubs being informed of such?

Others: An interesting comment came from an Adelaide respondent saying, "...Better sets should be produced and the term 'CB' should be changed to 'Amateur'. Amateurs in all callings are people who are not professionals. It is not necessary to have a degree in automotive engineering to hold a driver's licence!"

From Warrnambool: "...More information at point of sale or renewed presence from Spectrum Management Agency...". A different thought from Albany in WA: "...Involvement of SMA by: 1) Occasional on-air warnings, and 2) Well publicised crack-down on major offenders." From Newcastle, NSW, "...Prosecute those ignoring the law. Advertise that conditions still apply, especially the emergency channels...". A major group in WA was the only one in this survey to mention bringing back licensing fees and using the money to police the bands.

It has been said that politicians only call for a report on a matter where the conclusion is known beforehand. Is this the same with asking questions?

An initial perusal of the six questions posed in this issue may have prompted thought that the answers were in fact easy and obvious.

But the responses as a small sample here show this not to be the case and, what's more, shows that organisations such as ACBRO must be very careful in offering opinions on behalf of so many over such a large area as this continent provides.

It is clear that the introduction of a CB class license did not solve many problems other than providing freedom of speech over a part of the radio spectrum without a tax being imposed.

For the many who take freedom of speech literally on the airwaves, and offend others with profanity and abuse, the need for clear regulations or guidelines is a must, and this should be followed up by policing those who are nonconformists.

In a service that relies on self-regulation, users should learn of tolerance and care in confronting problems that occur. As long as we are a part of a society that has need for a police department, we will likewise always have the need for a controller of those who use the airways.

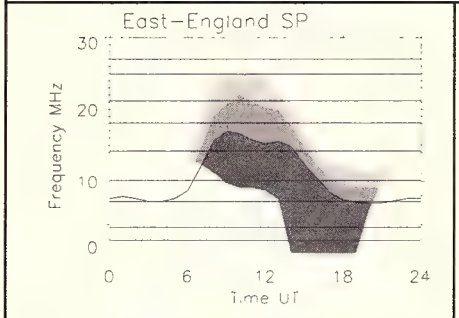
But the amount of control that such administrators may have to be effective as we would wish, is governed by so many variables, of which money is only a small part, and the evidence is abundantly clear, that the CBer is happy to not be outlaying many valuable dollars on licences, and he or she may need to be like Pollyanna, and be glad.

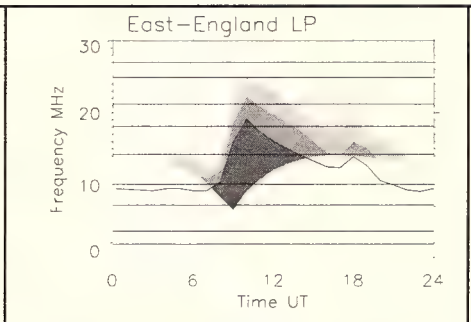
ACBRO ASSOCIATED CLUBS

Below is a list of clubs and organisations affiliated with ACBRO Inc. If you have one of them in your area, please give them your support of membership. Full details can be obtained by contacting the group of your choice from the following list.
For club membership or affiliation inquiries, please contact: **ACBRO Inc**, PO Box 170, Walkerville, South Australia 5081

Aust. National Four Wheel Drive Council	PO Box 79, Canberra, ACT 2601
BG-3 Filipino Radio Club Inc	PO Box 257, Paddington, NSW 2021
'Blue O' Radio Group	PO Box 53, Monaro Cres, ACT 2603
Barossa & Districts Repeater Assoc, Inc	RMD Truro, SA 5356
Broken Hill UHF Repeater Club Inc	PO Box 1023, Broken Hill, NSW 2880
Bunbury Radio Club	PO Box 31, Bunbury, WA 6231
Burnie Citizens Radio Club	PO Box 655, Burnie, TAS 7320
Canning River Radio Club	53 Parkside Ave, Mt Pleasant, WA 6153
Central West CB Radio Club Inc	PO Box 628, Orange, NSW 2800
Cherokee Indian Aust Group	PO Box 1679, Mildura, VIC 3500
Cleveland Bay Radio Club	PO Box 1641, Aitkenvale, QLD 4814
Coal Miners Wonthaggi CB Club	PO Box 420, Wonthaggi, VIC 3995
Dusty Radio Group of QLD	169 King Street, Charleville, QLD 4470
East Coast Radio Club	PO Box 412, Bexley, NSW 2207
Echo Romeo CB Association	PO Box 302, Morphett Vale SA 5162
Elizabeth CB Radio Foxhunt Group	C/- 44 Pix Road, Davoran Park, SA 5113
Felix Radio Club	PO Box 78, Goodna, QLD 4300
Friendship Radio Club Inc	PO Box 394, Kallangur, QLD 4503
Geelong Radio CB Club of Australia	PO Box 736, Belmont, VIC 3216
Gippsland Repeater Assoc Inc	PO Box 555, Maffra, VIC 3860
Home Brew Makers CB Radio Club	PO Box 224, Gratton, QLD 4343
Inlander CB Radio Club	PO Box 5712, Rockhampton, QLD 4702
International Black Duck DX Group	PO Box 224, Gratton, QLD 4343
KBY 03 Repeater Association	PO Box 57, Port Elliot, SA 5212
Kilo Romeo Circle of Friends	PO Box 16, Cleveland, QLD 4163
LT Club Inc	PO Box 626, Launceston, TAS 7250
MBV 08 Repeater Association	PO Box 44, Charleston, SA 5244
Mega Mouth International	PO Box 55, Mowbray, Launceston, TAS 7250
Mike Kilo Social Radio Club	PO Box 193, Boolaroo, NSW 2284
Murray Bridge Agric & Hort Society	PO Box 315, Murray Bridge, SA 5253
Naracoorte UHF Association	PO Box 465, Naracoorte, SA 5271
Newcastle Scanner Group	PO Box 728, Charlestown, NSW 2290
Oscar Romeo CB Club	PO Box 203, North Geelong, VIC 3215
Omega Radio Club, Inc.	PO Box 320, Malvern, VIC 3144
Overland Radio Club	PO Box 1010, Murray Bridge, SA 5253
Ozzie Rock	PO Box 6046, Woodridge East, QLD 4114
Ozzy Eagle DX Group	PO Box W110, Armidale, NSW 2350
Pioneer Radio Association (SA)	PO Box 1, Para Hills, SA 5096
Pioneer Radio Association Aust	PO Box 1415, Mt Isa, QLD 4827
Port Adelaide Radio Club	PO Box 352, Port Adelaide, SA 5015
Queensland Blue Heeler Soc Radio Club	PO Box 1122, Castle Hill, NSW 2154
Queensland Radio DX International Club	PO Box 586, Warwick, QLD 4370
Radio Hobart CB Club	PO Box 545, Glenorchy, TAS 7010
Rotten Radio Group International	PO Box 4, Dry Creek, SA 5094
SA Rotten Radio UHF Association	PO Box 4, Dry Creek, SA 5094
Samba Club	PO Box 16, Salisbury, SA 5108
Shipwreck Coast DX Int Group	PO Box 1380, Warrnambool, VIC 3280
South-West District CB Radio Club	PO Box 620, Warrnambool, VIC 3280
Sugar Valley Radio Club	PO Box 1070, Edgeworth, NSW 2285
Sun Centre CB Radio Club	PO Box 912, Swan Hill, VIC 3585
Sydney Radio Group	PO Box 185, Gordon, NSW 2072
The Pathfinder Radio Soc Club	PO Box 24, Woodridge, QLD 4114
The Triple "Rs" Group	PO Box 282, Ingle Farm, SA 5098
Transworld CB Radio Club	90 Crozier Avenue, Daw Park, SA 5041
Transworld Sidebanders (The X-Ray Club)	13 First Street, Port Pirie, SA 5540
Tweed Radio DX Group Intnl	PO Box 773, Murwillumbah, NSW 2484
Ugly CB Club	11 Billingsley Court, Morwell, VIC 3840
UHF Assoc of WA Inc	PO Box 316, Cloverdale, WA 6105
Ultra-Lite Radio Club Inc	PO Box 2022, Salisbury East, QLD 4107
White Fox Radio Club	PO Box 288, Salisbury, SA 5108

Propagation forecas





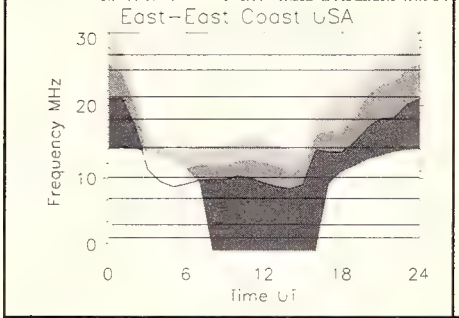
ABOUT THESE CHARTS

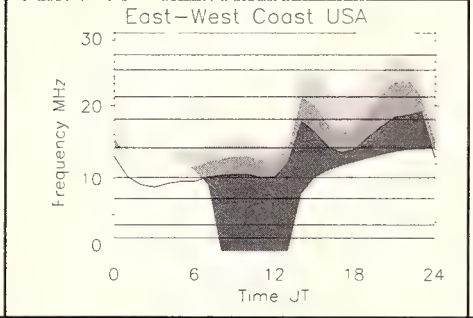
The data on these pages are graphs showing forecasts for expected HF operating conditions between Australia and a number of important DX destinations. The information they contain is prepared by **IPS Radio and Space Services**, a division of the federal Department of Administration Services. IPS monitors changing radio conditions — which are affected most greatly by fairly predictable changes in solar activity — and issues reports and warnings based on that data.

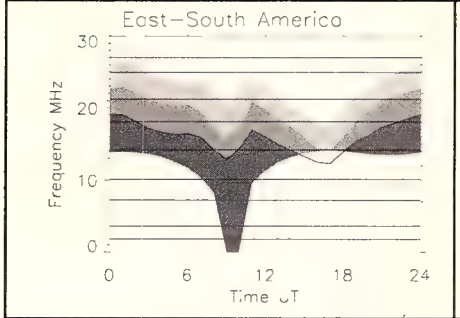
Stations in the eastern half of Australia should refer to graphs on the left hand page. The data on the right hand page is calculated for stations in the western half of the continent. Of course, if your location is in the middle of the continent try reading them *both*... then make an educated guess.

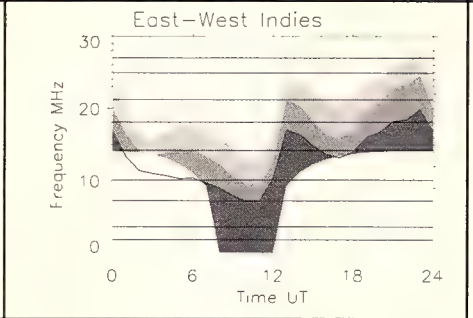
The horizontal axis of each graph represents the hour of the day expressed in Universal Co-ordinated Time or UTC ('z'). The vertical axis shows the entire HF spectrum with a horizontal line representing each HF amateur band.

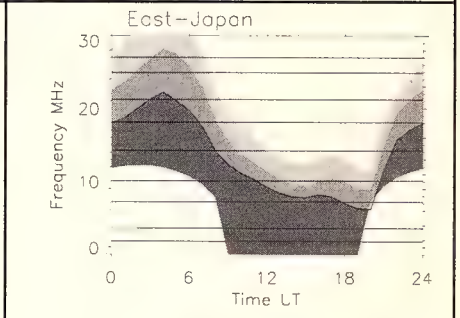
The maps are easy to read. First go to the map which looks closest to the area in which you are interested. Look *up* from the time and *across* from the frequency to the point at which the two variables merge. Note which grey scale — if any — appears at the intersection of the particular time and frequency combination for that area and refer to the legend (right) to find the sort of propagation most likely to apply. If the space is blank the forecast is not good — your time and frequency combination is unlikely to allow communication to the destination station.

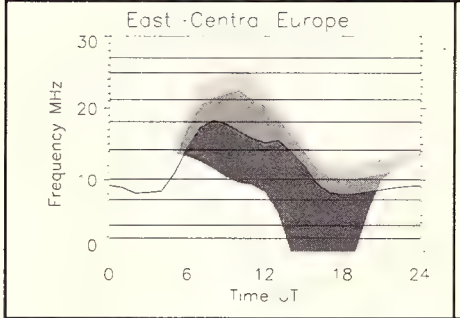


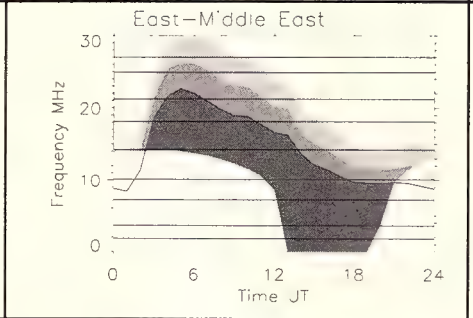


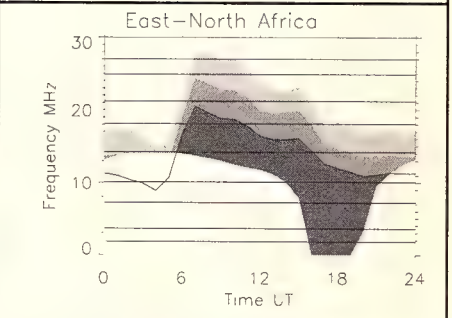


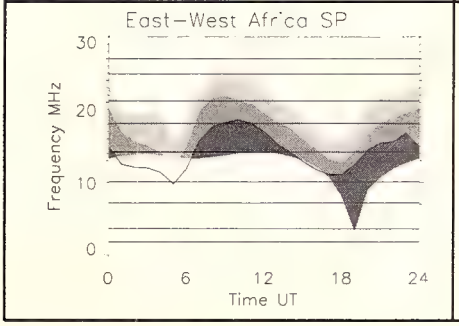


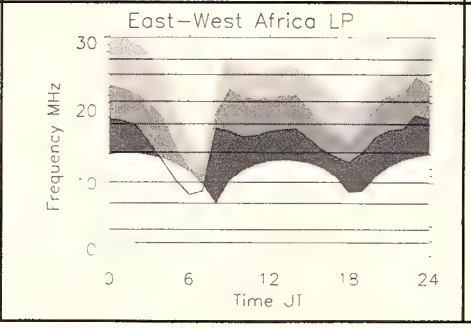


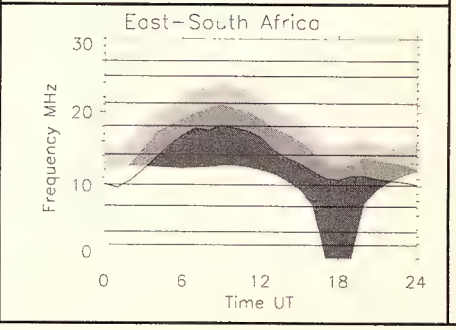












ter Dec 1996

LEGEND

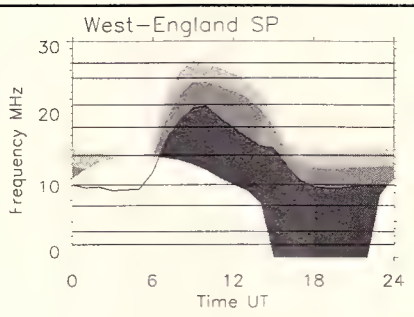
UD Upper Decile — You have a 10% chance of getting through.

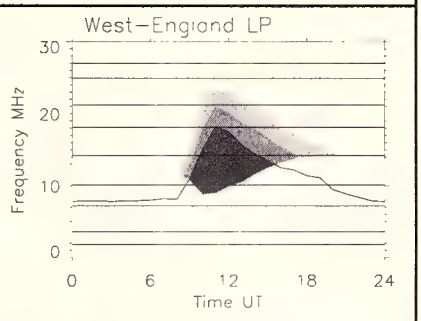
MUF Maximum Usable Frequency. 50% chance to get through.

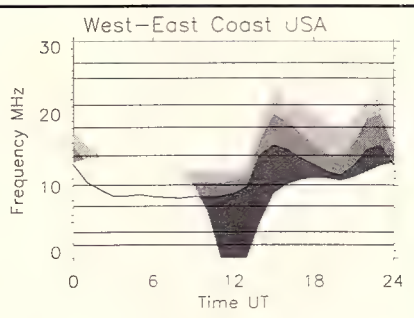
OWF Optimum Working Frequency. 90% chance of a contact.

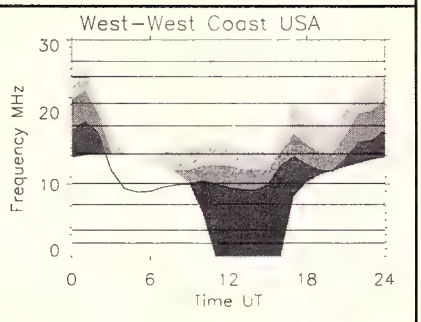
EMU E-layer Maximum Working Frequency.

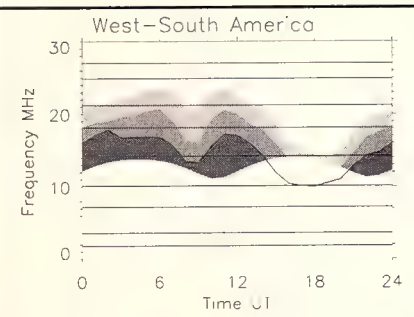
ALF Absorption Limiting Frequency. Lower limit of the usable band.

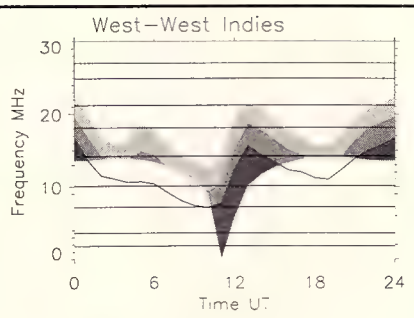


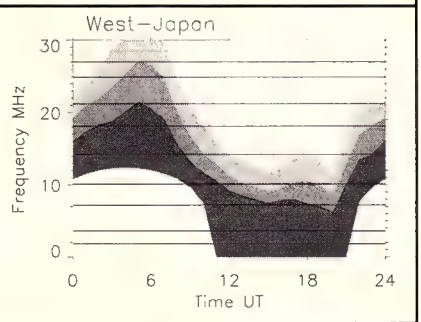


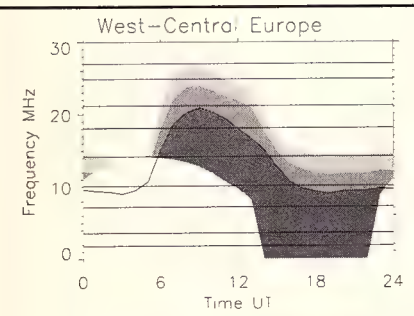


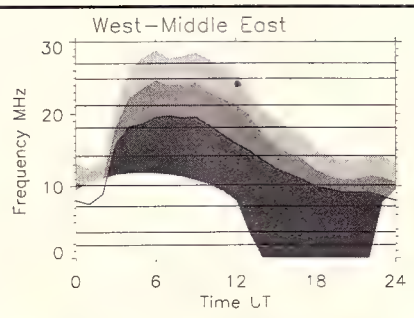


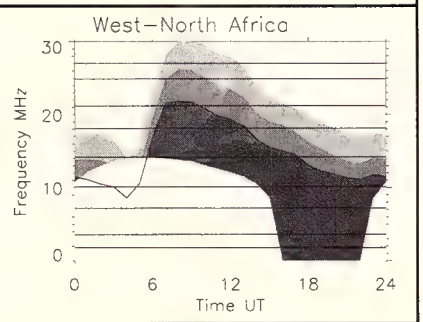


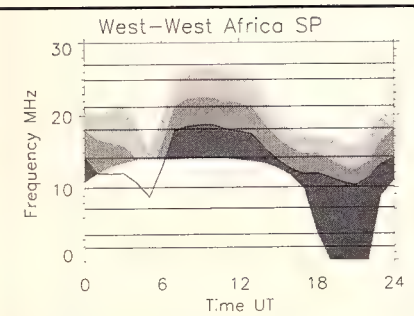


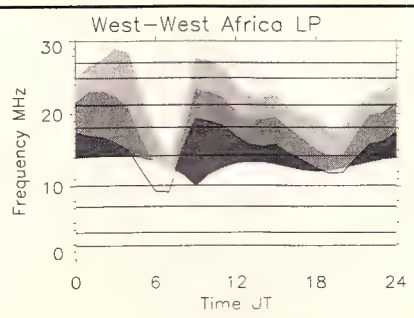


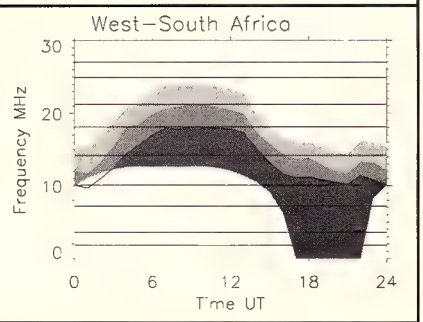












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The history of telegraphy

By Angelo Brunero, IK1QLD and Andrea Borgnino, IW1CXZ
Translated by Andrea Valori, IK1QFT

You can find this article and many more like it on the internet, on the Marconi home page, which is http://www.alpcom.it/hamradio

Telegraphy (in Greek: writing in distance) is, as we know, a communication system able to transmit signals which represent coded letters, numbers and signs of writing. Telegraphy has very ancient origins, and can be divided in acoustic, optical and electrical.

The Greek historian Diodorus Cronus (IV century BC) tells how Persian king Darius I (522-486 BC, son of Istapses, who brought the Empire to its maximum extension from Indus to Danube rivers, and who was later defeated by the Greeks in Marathon) could send the news from the capital to the provinces of the Empire, by means of a line of shouting men positioned on heights.

This kind of transmission was 30 times faster than normal couriers. In the *De Bello Gallico*, Julius Caesar (100-44 BC) writes that Gauls, using human voice, could call to war all their warriors in just three days.

Optical telegraphy used fire at night, and smoke or mirrors during the day. In homeric, poems often told of this way of communication. The tragic poet Eschilus (525-456 BC) describes this in details in his poem *Agamemnon*.

The Bible tells us how Moses drove the Jews in their escape from Egypt by means of columns of fire and smoke. Unique and original is hydraulic telegraph, described by Eneas the Tactic (IV century BC) — a device that, according to historians, was invented by the Cartaginese. It consisted of two cylindrical vases (a transmitter and a receiver) perfectly identical and placed in two distant hills.

Filled with water, they had a floating vertical pole at the centre with conventional signs in it. To communicate, they just needed to rise or lower the pole emptying or pumping water in the vases to the desired point. Start and ending of transmission was pointed by flags or torches. Over this oddities emerged the optical telegraph by Claude Chappe (1763-1805) and his brother Ignace.

On May 22,1792, Chappe showed his invention to the French Legislative Assembly which adopted it officially. The first telegram sent with this telegraph announced the victory of Cond over Austrians on November 30, 1794. At the time. many European states installed on their territories the Chappe telegraph.

Signals were based on the different positions taken by three wooden interlinked arms, the central one (regulator) being longer than the other two (indicators or wings), and rotating at the top of a vertical fixed pole. The two lateral arms could rotate freely around a centre, with displacements of 45°. The different positions of the arms could transmit nearly 8,500 words of a general vocabulary of 92 pages, each containing 92 words.

Only two signals were required for a single word: the page of the vocabulary and the number of the word! A revolution in telegraphy was consequent to the discovery of electric current, to the invention of the battery by Alessandro Volta, and to the studies of André Marie Ampere (1775-1836).

The first telegraphs had two electrical lines, with a galvanometer detecting signals at destination. Subsequently the system was reduced to just one line, since the circuit was closed by the ground.

American inventor, and painter of some renown, Samuel Finley Breese Morse (1791-1872) was the realiser of electric telegraph, since others were working at the same idea: Morse's telegraph is the oldest of all the electric telegraphs. Morse toured Italy in 1830 and painted many pictures while there; he was forced to leave Rome in 1831 due the revolution in the Papal States.

In 1832 he returned to America on board the *Sully* when the concept of a 'telegraph' based on electromagnetism came to him. In his studio at New York University (in New York City) he worked on his telegraph regularly for six years. He received a patent for his telegraph invention in 1838... also in the same year he completed his last two paintings.

Morse made his experiences on electricity in his painting atelier, and his first telegraph receiving instrument was constructed on a canvas stretcher frame. A wooden clock motor provided the power to move a paper tape under a pen. The pen was moved by an electro-magnet, driven from the telegraph line. The canvas stretcher was used only as a frame to support these devices. This canvas stretcher telegraph receiver is on display in the Smithsonian Institution, at the National Museum of American History in Washington, DC, USA.

Another of the oldest in the world can be seen in the historical postal and telegraphic museum of Roma-Prati opened in December 20, 1959. It comes from the old Pontificial State and was used to connect Rome and Terracina, starting his service in September 1853.

On May 24, 1844, Morse sent the famous words from the Bible, Numbers 23:23, What hath God wrought! on his telegraph from the US Capitol Building in Washington, DC to the B7O Railroad Depot in Baltimore, Maryland (now the location of the B&O Railroad Museum).

Morse-related memorabilia are located at both locations today.

If you buy R&C from your newsagent each month you will pay $54 a year - not bad for a year's reading BUT if you take out a subscription you don't have to walk to the newsagent and take the chance of finding that it's already sold out

By any standard, RADIO and COMMUNICATIONS is pretty good value.

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It has by far the widest scope of any "communications" type publication available in Australia... and of course there are also the classifieds. If you want to buy or sell communication equipment R&C is the place in which to do it — but it often sells out within a couple of days of going on sale.

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NEW: send your Classified ad for 25 words or less by Internet email (plain text only, please) to vk3ce@tbsa.com.au

Radio and Communications

Incorporating AMATEUR RADIO ACTION and CB ACTION

Amateurs, CBers and hobby communicators of all kinds are invited to place a FREE classified in this section of the magazine. Amateur gear, CB radios, scanners, antennas, computers, wanted or for sale items, power supplies... it's all fair game. Note our policy, however, that readers who do not hold an amateur qualification may not advertise to purchase amateur transmitting equipment. So dust off that old relic and get busy with the biro. Your first 25 words are FREE, then it's just $4 per 25 words after that. Adverts must be clearly PRINTED. Please read and note the conditions below.

Readers of **RADIO and COMMUNICATIONS** may use the **CLASSIFIEDS** column to the extent of 25 words absolutely free! This offer applies only to private "For Sale" or "Wanted" classified listings, and to computers, software or computer peripherals and other hobby communications equipment — scanners, amateur or CB transceivers, etc.

A **limit of one classified** advertisement applies to each advertiser. Any additional words must be paid for or the advertisement will not be accepted. A nominal fee of $4 per additional 25 words or part thereof will apply. This fee should accompany your material if applicable. Please enclose this fee or your advertisement will not appear. Preference is given to paid advertisements, and we receive an awful lot of them each month...

Your advertisement's **inclusion cannot be guaranteed**, but every effort will be made to place your advertisement in the issue following receipt of copy. The 25 words **must include your name and phone number.**

The publisher reserves the right to amend or reject any advertising material considered unsuitable for publication. No correspondence will be entered into. DO NOT SEND TWO FORMS. ONLY ONE WILL BE RUN!

Repeat CLASSIFIEDS advertisements will be accepted for a fee of $4 for every 25 words — *including* the first 25. Once again, this fee should accompany your material.

Advertisements for **commercial goods or services** will not be accepted for publication in these classifieds pages. This classified section is for **private sales/purchases** only.

For details of display advertising elsewhere in the magazine phone our advertising manager, Kate Shaw, on (03) 9752 6186

Readers should note that all advertisements are required to comply with the provisions of the Victorian Consumer Affairs Act of 1972. They should be aware that, under the above Act, Post Office box numbers can be published **only if the full name and residential address** of the box holder is supplied with the advertising material.

This form is to be used for all classified advertising material in **RADIO and COMMUNICATIONS**. Letters on plain paper requesting the insertion of a classified advertisement will not be accepted.

Telephone inquiries (for Classified adverts only): (03) 9722 9666

Clip this form and post it complete to:
RADIO and COMMUNICATIONS Classifieds
Box 1 Yarra Road, Wonga Park, Victoria 3115

If you fax your ad, don't post it too!

You can email your ad to vk3ce@tbsa.com.au or fax *25 words or less* to (03) 9722 9666

IMPORTANT NOTICE: Unsuitable material includes advertisements for wanted amateur transmitting equipment where no valid amateur call sign is shown, 'for sale' equipment modified for general coverage transmit, etc.

YOUR NAME AND CONTACT DETAILS MUST APPEAR IN THE ADVERTISEMENT COPY

➡ ONE | WORD | PER | BOX!!! ➡ *December issue deadline: November 29, 1996*

FREE PAY $4 — FRE PAY $4

BELOW IS NOT FOR PUBLICATION, BUT THE DETAILS MUST BE COMPLETED OR YOUR CLASSIFIED *WILL NOT RUN*

Your name: ..... *Amateur call (if any):* **VK** .....

Residential address: ..... *Phone contact*: ( )* .....

..... *State* ..... *Code* .....

Your signature: ..... *Today's date: / /* .....

* This number is for the editor's use only — to check any details. State if business or after hours number. *NOT* for publication!

...CLASSIFIEDS...CLASSIFIEDS...CLASSIFIEDS...

ADVERTISERS PLEASE NOTE

All classified advertising copy is typed in by a non-amateur typist who, reasonably enough, cannot decode illegible writing. In short, she types what she sees, and if your writing is poor you can expect either crucial errors, or the non-appearance of the advert. PLEASE ENSURE THAT YOUR CLASSIFIED IS LEGIBLE. ALTHOUGH YOU KNOW WHAT YOU'RE ADVERTISING A TYPIST DOESN'T!

VK1 AREA

• **MFJ**-1796 10-30MHz ant remote control, cont cov, 1YO, top cond $495. Greg, VK1GPC (06) 247 3771

VK2 AREA

• **Butternut** HF-2V 40-80-160M vert antenna $400. **Autek** RF analyst model RF-1 $200. **MFJ**-207 $125. **MFJ**-247 $200, as new. Jim, VK2AKJ (02) 9427 1398

• Deceased Estate **HyGain** TH-6 triband Yagi 20-15-10m with 60ft telescopic wind-up tower, balun & coax. Price neg. Thelma (068) 82 1150

• **Icom** IC-2SA simple 2m FM HTs, two of, (no keypad versions) with DTMF selective call, paging option, box, manual, chrgr. $200ea, $350 the pair. Yves, VK2AUJ (02) 9949 5602. Licensed amateurs only.

• **Icom** IC-490A 430MHz all-mode xcvr $540. **Amps**: 432MHz linear 50w $300. 2m linear 30w $140. **PacComm** Micropower 2 TNC $250. **AEA** PK-232MBX $375. YM-38 desk mic $35. Randall, VK2EFA (080) 87 5285. Transmitting gear sold to licensed amateurs only.

• **Icom** IC-701 HF xcvr with pwr supp, RM-3 desk mic, fully wkg $700 ono. Simon, VK2WLM (067) 32 5646. Licensed amateurs only.

• **Kenwood** PS-50 pwr supp $275. **Tokyo** HF linear amp 500w $700. **Palomar** preamp $150. **Kenwood** 2001 SWR/pwr meter $150. **Emotator** 6700 rotator HD $400. Complete mini beam **TET**-23 14, 21, 28 $200. Des, VK2AGA (065) 53 9607 or email: dhanc@midcoast.com.au. Transmitting gear sold to licensed amateurs only.

CAVEAT EMPTOR — BUYER BEWARE

*The acceptance of classified advertisements in the **Radio and Communications** classified advertising section does not warrant in any way that the goods offered are available, free of any encumbrance, in working order or otherwise satisfactory. The purchase of goods by private sale does not offer the purchaser any protection under law, and buyers should be certain the goods under consideration are suitable for the purpose for which they are required. Radio and Communications cannot accept any responsibility for goods advertised in the classified pages and no correspondence will be entered into regarding such goods.*

The onus is on you...

• **Kenwood** TS-120S HF xcvr with AT-230 tuner, MC-50 mic & all bks, GC $690. Tom VK2ETP (048) 83 6466. Licensed amateurs only.

• **Kenwood** TS-120V HF xcvr plus TL-120 linear plus 20A pwr supp. $400 the lot. Alan, VK2CBK (066) 51 3888. Licensed amateurs only.

• **Kenwood** TS-520 HF xcvr with remote VFO-820, MC-50 desk mic, manuals, plus extras $400. Graham, VK2FGI (066) 24 2219. Licensed amateurs only.

• **Kenwood** TS-520S HF xcvr & DG-5 display, SP-820 spkr, Kenwood GDO, spare new 6146 final valves, Oskerblock power VSWR meter, all in GC. Forced sale; $500 the lot. Len, VK2EDQ (043) 32 4838. Licensed amateurs only.

• **Kenwood** TS-520S with YM-38 desk mic VGC $350. Casey, VK2CWS (02) 9520 4424. Licensed amateurs only.

• Deceased Estate: **Kenwood** TS-530S HF xcvr, AT-230 tuner, MC-50 mic, CW key, dummy load $650. **Kenwood** QR-666 rcvr $150. Both priced to move fast. Richard, VK2SE (02) 9823 1229. Transmitting gear sold to licensed amateurs only.

• **Linear amp**: CD Jumbo, no use to me! $200 ono. Justin, VK2HAK (044) 76 7288

• **Marconi** 2955 comms test set with manual EC $7000. **Hewlett Packard** Oscilloscope HP-1740A 100MHz with manual EC $950 Peter, VK2GVQ (066) 57 8003

• **Mirage** A-1015 6m amp, as new. 10w in, 150w out, priced to sell $450. Mark, VK2EMA (068) 92 4211. Licensed amateurs only.

• **Philips** RF power amp type AM-17 100W linear 250W class C, 70-175MHz, as new $325. **Hewlett Packard** distortion analyser model 332A 5Hz-600kHz $275. Peter, VK2CPK (02) 9605 4790

• Deceased Estate: **Tektronix** Oscilloscope model 422 15MHz dual-ch $350. **TH-6** Yagi mounted 30ft approx wind-up tower $900. Purchaser to dismantle. VK2AIT (02) 9876 4785

• **Wanted** Morse keys: any unusual Aust keys or semi-autos esp Buzza-100 or Buzza range. Also McDonald Pendograph range. Aust PMG, simplex autos & auto Morse keys, also any info on the Autoplex by J Vail. Will pay top dollar. Steve, VK2SPS (02) 9999 2933

• **Wanted**: copies of manuals, circuits & any tech info for Bird 4311, 4410 wattmeters, level TM-6B broadband voltmeter please. Bob, VK2CAN (02) 9416 3727

• **Wanted**: Rotator, medium/heavy duty such as Kenpro KR-1000, Create RC-5A-2, Emotator 1200FXX. Guy, VK2BBF (047) 51 6726 A/H, (02) 9850 8930 B/H

• **Wanted**: Service person with service manuals to repair 7000-E Tono keyboard. Please contact VK2DLW (066) 55 1564 or write F Reid, PO Box 142, Bellingen, NSW 2454

• **Wanted**: Yaesu FT-225 RD & FT-625 RD in good unmodified cond. Eric, VK2ZEV (02) 9645 1078

• **Yaesu** FT-101E HF xcvr with YC-601 display, new spare finals, manuals, desk mic, hand mic $450. **Tubes**: 3-500Z, brand new, imported from the US, 2 only, $600. Mark, VK2LX (07) 5590 9593. Licensed amateurs only.

... ☞

QSL CARD COLLECTION

Please make donations of amateur QSL cards to the WIA QSL collection and save something for the future. If you are helping a silent key estate, please contact Ken Matchett, VK3TL, 4 Sunrise Hill Road, Montrose 3765, or phone (03) 9728 5350. Arrangements can be made for large quantities of cards. Can you spare a few?

Please note that all phone numbers are AFTER HOURS unless otherwise noted.

6.30 . 7.00 -

...CLASSIFIEDS...CLASSIFIEDS...CLASSIFIEDS...

VK3 AREA

• **Antenna**: 4-EL home-brew Yagi, 20m mono, 8M boom, 1.5kW balun, coax clamps, built to specs ARA Ant Book No.3 page 60, model N2 FB ant, dismantled $200. VK3BTG (03) 9758 5701

• **Icom** IC-725 HF all-band xcvr, VGC $1100 ono. **Kenwood** TS-50S HF xcvr, as new $1150 ono. Bill, VK3WK (055) 61 1376. Licensed amateurs only.

• **Icom** IC-730 HF xcvr with WARC bands. Has IC-HM7 & IC-SM5 mics plus IC-PS20 pwr supp $825. **Dick Smith** 6m linear amp 100W $100. Kev, VK3JKT (054) 68 1367. Licensed amateurs only.

• **Icom** IC-781 150 watt HF xcvr. Well, you've read the multi-way HF rig comparo in this issue, so this one's for sale! Until recently, it was the best all-band HF transceiver ever made. New price is still listed as over $13,500, but I've slashed this one to $5750 — and at that price it is really very, very good value indeed. This one is EC and unmodified. Has built-in spectrum scope, fast DDS, instant auto ATU and more... Can freight anywhere. (And yes, I'll haggle!) Chris, VK3CE (03) 9722 9666 all hours. Licensed amateurs only.

• **Kenwood** TS-120S 160W DFC, YK-88 filters, WARC bands, with workshop svce manual, mint cond $700. Maurice, VK3VTW (052) 48 1669. Licensed amateurs only.

• **Kenwood** TS-440S/AT HF all-mode 100w xcvr, with inbuilt auto ATU, mint cond incl box & manuals $1350. **MFJ**-1274 packet TNC with tuning indicator, brand new $200. Rob, VK3TRX (03) 9367 4096. Transmitting gear sold to licensed amateurs only.

• **Kenwood** TS-751A 2m all-mode base or mobile xcvr incl hand mic, workshop manual, fitted optional tone board, 25w output, 10 mems, dual VFOs, variable RF gain control $650. Good performer! George, VK3YSU (015) 35 7402 or (03) 9428 0141 B/H. Licensed amateurs only.

• **MFJ**-841 2m hand-held SWR/wattmeter, as new in box $25. model 110 SWR / power meter 100W $25. $45 for both. **Also** R-5000 antenna rotator control box only $45. Archer antenna rotator control box only $35. Thomas, VK3PTB (03) 9803 9051

• **Satellite rcvr**: dual input, low noise 4dB 100ch with remote control unit. Will drive magnetic servo & voltage switching polariser, as new in box $250. Neil, VK3BCU (03) 9390 2873

• **Shack cleanout**: **Icom** IC-575H dual-band high-power xcvr 6/10m (front panel damaged, but works perfectly) $1300. **Icom** IC-25H 2m 45W xcvr $300. **Philips** FM-321 70cm xcvr $125. **Yaesu** FT-101 HF xcvr (has been modded) $200. **Yaesu** FT-290R with Mutek 145sb SLNA low noise front end (not fitted) $450. **Yaesu** FT-6010 10w amp to suit FT-690R $50. **AOR** 2m FM HT $200. **Icom** BC-30 desk chrgr $100. **Icom** IC-202 2M SSB/CW portable xcvr $150. Mike VK3BDL (03) 9589 5797. Transmitting gear sold to licensed amateurs only.

• **Wanted**: HF 3-30MHz 100 or 250W element to suit Bird Wattmeter type 43. Mike, VK3AJD (03) 9306 9771

• **Wanted**: manual or circuit description for Lafayette HE-30 or kit KT-320 circa 1961-64. Will pay all costs this end. John (054) 52 2874

• **Wanted**: Yaesu FT-101Z svce manual. Peter, VK3DPL (056) 74 1351

• **Yaesu** FT-101E HF xcvr incl CW filter $400. **Yaesu** FT-707 HF xcvr incl 160m $600. **Also** Speech proc $40. Ken, VK3DQW (052) 51 2557. Transmitting gear sold to licensed amateurs only.

• **Yaesu** FT-2400H Mil-spec 2M mobile FM xcvr. Very tough rig; ideal for the car, but this one was used in the shack for packet. With orig box, mob mtg brkt, all cables & manual. New $700, sell $450 ono. EC. **Standard** C558 dual-band HT. Wide rcve on both bands. With NiCd batt pack and CWC150 NiCd charger, CTN-160 tone squelch board. Only 12 mths old. New around $1400, sell $800 or offer. EC. (018) 54 0154 any time. Licensed amateurs only.

• **Yaesu** FT-26 compact 2M FM HT. Rcve 130-174MHz. 53 mems, 0.5-5W O/P, with chrgr, manual GC $295. Andy, VK3UJ (03) 9726 8879. Licensed amateurs only.

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VK4 AREA

• **AEA** PK-64 modem. Gives Packet, Amtor, RTTY, CW, HF/VHF/UHF on a C-64. **Commodore** C-64 with 1541-11 disk drive, MPS-803 printer, B&W monitor, joystick, GEOS flight simulator, amateur satellite, greyline, log book, utilities & other sftwre, with all manuals $350. VK4AI (07) 3284 5688

• **Antenna** triband CA-33 3el Yagi, brand new, still in carton $475. Fred, VK4NBI (071) 23 4121

• **Kenwood** TS-50S HF xcvr with 500Hz filter, PC, with orig cartons etc $1200. Finn, VK4LL (018) 76 2916, (07) 3344 2167. Licensed amateurs only.

• **Philips** FM-828 remote 10ch tuned on 2m with 144.725 xtals $115. **Also**: dual-band mob antenna with gutter grip $55; dual TNC-220+s packet controllers $245. Mark, VK3TCD/4 (014) 98 2586

• **Pocom** AFR-1000 fully-auto decoder w/video outlet, top cond $400. **Spider** 4-band HF antenna, for mobile or limited space cond. With mount $120. Hans, L40370 (HS1ALK/VK4), (07) 5479 4561

• **Tower** 2 sections, crank-up to 15m incl 2 winches & cable $300. Len, VK4CEL (070) 57 6097

• **Tower**: 4-stage tiltover tower, 75ft+. **Earth braid**, 7m-27m $2/m. 3000+ **valves** metal Octal miniature. Peter Hadgraft, VK4APD, 17 Paxton St, Holland Park 4121 or (07) 3397 3751

• **Valves:** QQV06/40, QQE06/40, QB3/200, 3BPP, QE08/200, QY4-400B, 6146, QQV03-20 ***swap*** for 212-E, HY3-P75, 211, VT-4C, 300B, 4300, 845, KT-88, KT-66, 50 or sim. John (07) 5449 1601

• **Wanted**: Kenwood TS-530S xcvr in EC. Peter, VK4BPK (076) 30 8011

• **Yaesu** FC-700 antenna tuner $199. **Icom** IC-735 HF xcvr $899. **MFJ**-1278B multi-mode data controller $299. **Yaesu** FT-480R 2m all-mode $399. **Yaesu** FT-470 dual-band HT $399. Fred, VK4CFB (07) 5529 6806. Licensed amateurs only.

• **Yaesu** FT-101B HF xcvr with spare finals $400. Phil, VK4CDI (076) 31 2444 B/H or moat@usq.edu.au. Licensed amateurs only.

• **Yaesu** FT-290R 2m all-mode xcvr $390. **Icom** IC-32AT dual-band HT $490. **Kenwood** TS-60 6m all-mode $1190. All EC. Percy, VK4ZZL (07) 3829 0945 or 041 262 1475. Licensed amateurs only.

• **Yaesu** FT-747GX HF xcvr with manual, mic GC $800. John, VK4MPK (07) 5466 7270. Licensed amateurs only.

VK5 AREA

• **Cubical quad** antenna, dual-band 10/15m. Bandit spreader bases, only single coax feeder required. $150 ono. Rob, VK5CS (085) 68 5411

• **Wanted**: Kenwood SM-220 Station Monitor / bandscope. Prefer with 8MHz panadaptor module (as for TS-830 etc). Kevin, VK5BCB (087) 25 9248, fax (087) 266 350

• **Yaesu** FT-7B HF xcvr with mic, box, manual EC $420. **TenTec** Omni-D series B HF xcvr incl mtchng pwr supp EC $650. Arn, VK5XV (08) 8298 7029. Licensed amateurs only.

VK6 AREA

• **PRC-FI/F3** synthesised 2-12MHz SSB/AM xcvr with man pack & vehicle accessories. With 12v PSU & manual ATU, one BB/FI battery. 10,000 chnls for $1000! Ian (097) 61 1010

New CB User Directory

Wanted: CB radio operators for the **Australian CB Call Sign & QSL Book**. Send self-addressed envelope to Derrick Sykes, PO Box 1566, Tamworth NSW 2340

VK7 AREA

• **Yaesu** FT-747GX HF xcvr with gen cov rcvr (500kHz-30MHz); xmit 160-10m. Has built-in AM-CW narrow SSB filter, as new boxes, manuals $860 ono. Allen, VK7AN (03) 6327 1171 or 018 13 4837. Licensed amateurs only.

Scanners and comms receivers

• **AOR** AR-1000 XLT H/H scanner, hardly used, cost $700, best fair offer for quick sale. Des, VK2AGA (065) 53 9607 or dhanc@midcoast.com.au

• **AOR** AR-8000 wideband scanner plus **MFJ**-1024 remote active antenna; both as new $1000. Kim (03) 9435 5767

• **Comms rcvrs**: Collins R-390A, Motorola $750. Racal RA-17 from $200. Murphy B-40 $300. Philip (09) 272 6483

• **Icom** IC-R7000 all-mode rcvr, covers 25-2000MHz, mint cond, with box & book. $990 plus freight. Graham, VK6RO (09) 451 3561

• **Icom** IC-R71A rcvr with many options incl match ext spkr PC $950 ono. Steve (03) 6458 1269

• **Kenwood** QR-666 rcvr $150. Richard, VK2SE (02) 9823 1229

• **Rcvr** FM 1.6-110MHz as PC card to IBM computer with educational package, hrdwre, sftwre, manual $80. Mark, VK2GND Ph/fax (02) 9482 1565

• **Software** fully digital comms rcvr for Microsoft Windows, digital signal proc, 48 filters, spectrum analyser, database etc. 0.5-30MHz, 108-174MHz Half price $1600. George (02) 9642 8970

• **Uniden** Bearcat UBC-9000XLT 500chnl scanner, as new. I will stick to my hand-held! $500, no offers. Terry (063) 37 9342

• **Wanted**: Older-style portable gen cov rcvr by Sony, National, Trio, Magnavox, Grundig or sim. Semi-portable okay. Sam (08) 8449 9902

• **Wanted**: parts for AOR AR-2001 scanner. Keypad is main part required. Chris (043) 92 0229

• **Yaesu** FRG-7700 comms rcvr, as new incl opt mem unit, manual & orig pckg $425. Richard (066) 45 3505

• **Yaesu** FRG-9600 all-mode scanner $500. Discone antenna to suit $100. Graeme (02) 9909 1260

CBs

• **'Inter 66'** broken old bottles — passed away to big base station in the sky. This is for those who knew my dad. Ellen, INT 066 (057) 51 1362

• **Kilmore** message service. Free message drop for Kilmore area UHF ch13, HF ch13 & 8. Call KMS.

• **Uniden** UH-099 UHF CB prog with Selcal, still under warr. $300. John, (07) 5466 7270

• **Wanted**: Standard desk mic for PRO-810E. Tim (067) 72 5978

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• **Codan** 8528 commercial-spec HF xcvr with all RFDS & Radphone freqs *plus* free-tune amateur options. USB, LSB, CW with h/phones, remote control socket. Freely tunes all amateur bands. With ZCG 1.6M rugged whips 80-40-20-15. All EC & has had little use. $2750 the lot. Len, VK3BMY (058) 62 3116 all hrs. Licensed amateurs only.

Please note that all phone numbers are after hours unless otherwise noted.

QSL CARDS

QSL cards, white or coloured, pre-printed or fully personalised with callsign, operator's name, QTH, station equipment, QSO panel, with or without logo, gloss or matte cards. Top quality cards at best prices — 100 fully personalised cards for just $19.50 plus postage.

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BINT Services Pty Ltd,
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UHF CB REPEATER LIST

NEW SOUTH WALES

Callsign	Town/Locality
Channel 1	
BEL01	Belbora
BHI01	Broken Hill
BIN01	Bingara
BOB01	Harden
BRE01	Brewarrina
BRH01	near Broken Hill
BUN01	near Merriwa
CHT01	Charlestown
COR01	Corowa
DNQ01	Deniliquin
GRE01	Grenfell
GUY01	Guyra
JIN01	near Jindabyne
KGL01	Kyogle
MBI01	Moonbi
MRT01	Wilcannia
MTE01	Mt Eagle
NEE01	Dubbo
NIM01	Nimmitabel
NYN01	Nyngan
RYL01	Rylestone
SYD01	Kirrawee
ULA01	Ulladulla
WAG01	Wagga
WGT01	Walgett
Channel 2	
BER02	near Gloucester
BRH02	Broken Hill
CAN02	Cangai — west of Grafton
EDN02	Bega / Eden
GDH02	Gunnedah
INV02	Inverell
KHN02	Khancoban
KOS02	near Thredbo
KUR02	Sydney — Kurrajong
LGW02	Mt Lambie
LIS02	near Byron Bay
MAC02	Port Macquarie
NBR02	Wee Waa / Narrabri
NOW02	Nowra
PAR02	Parkes
VRB02	Urbenville
WAL02	Walcha
WAN02	Wanaaring
WBD02	Walbundrie
Channel 3	
CAN03	near Orange
CAS03	Casino
COM03	Mt Kophi
DUN03	Dungog
GIL03	Braidwood
GTH03	Griffith
MDI03	Murrurundi
MNA03	Manilla
MOR03	Moree
MTI03	Tubramurra Shire
PLO03	east of Armidale
RWT03	Hay
SYD03	Blacktown, Sydney
TEN03	Tenterfield
Channel 4	
ARM04	Armidale
CBN04	Coonabarabran
DRK04	Girard
GLB04	Goulburn
HAY04	Hay
MON04	Kandos — near Mudgee
MUS04	Muswellbrook
OGU04	Ogunbi — near Tamworth
RIV04	Penrith Area
SOU04	near Cooma
THA04	near Broken Hill
TUL04	Tullibigeal
TWH04	Banora Point
WAN04	Mt Wandera
???04	near Nabiac

Callsign	Town/Locality
WAR04	Warialda
YNG04	Young
Channel 5	
	EMERGENCY REPEATERS
BIN05	Katoomba
BKE05	Mt Gunderbooka
CAP05	near Tenterfield
CHN05	Charlestown
COR05	Corowa
FOR05	Mount Tallabung
FRA05	Bellingen
GLB05	Goulburn
JIN05	Jindabyne
MTS05	Narromine
MTU05	S-west Slopes, east River
OXY05	Bourke
SYD05	Sydney
TAM05	Tamworth
TBO05	Mt Talbingo
Channel 6	
BAR06	near Narrabri
BON06	Bonshaw, Q/NSW border
COF06	Coffs Harbour
COL06	Oakey
GGG06	Glengary
LGW06	Lithgow
MAL06	Mallanganee
MTG06	Bowral
MUM06	Mumbulla Mountain
NAR06	Narromine
NEW06	Sugarloaf Range
ROB06	Mt Robert
TUM06	Snowy Mountains
WAL06	Walcha
WEN06	Tolarno
Channel 7	
BAL07	Buckombil Hill
BO007	Booral — near Bulahdelah
BOM07	Bombala
COW07	Cowra
GLH07	Glen Lyon
GLI07	Glen Innes
MIL07	Milton
NUN07	Nundle — near Tamworth
SYD07	Chatswood, Sydney
WAL07	east of Walcha
Channel 8	
BAT08	Bathurst
COB08	Cobar
CON08	Condobolin
EUC08	near Eucumbene
GLE08	Glen Innes

Callsign	Town/Locality
GRE08	Gresford — near Dungog
GRF08	near Grafton
KEM08	Kempsey
MER08	near Merimbula
MUR08	Tomewin
NAR08	Narrandera
ROB08	Illawarra
TBC08	Tooleybuc
URA08	Uralla — near Armidale
WAL08	Walcha
WOY08	Kariong

NORTHERN TERRITORY

Callsign	Town/Locality
Channel 1	
ALS01	85 km SE of Alice Springs
BPK01	90 km N of Alice Springs
DRW01	Darwin
KVB01	Double Hill
MLG01	Milingimbi
Channel 2	
ALC02	115 km NE of Alice Springs
DDB02	Garibaldi Station
SWN02	150 km NNE of Alice Springs
Channel 3	
ELK03	325 km NE of Alice Springs
ERL03	185 km SSW of Alice Springs
MMI03	Mistake Creek Station
Channel 4	
DPW04	70 km S of Alice Springs
MST04	110 km S of Alice Springs
Channel 5	
None assigned	
Channel 6	
HEN06	120 km SW of Alice Springs
Channel 7	
AMB07	85 km SE of Alice Springs
ASP07	Alice Springs
Channel 8	
None assigned	

The following frequencies are the repeater input channels:

Input	Frequency (MHz)	
31	477.175	
32	477.200	
33	477.225	
34	477.250	
35	477.275	** emergencies
36	477.300	
37	477.325	
38	477.350	

These are the assigned repeater output channels:

Output	Frequency (MHz)	
1	476.425	
2	476.450	
3	476.475	
4	476.500	
5	476.525	** emergencies
6	476.550	
7	476.575	
8	476.600	

QUEENSLAND

Callsign	Town/Locality
Channel 1	
ANN01	St Annes Range
BAR01	near Barcaldine
BAT01	Bathurst Heads
BNE01	Mt Cotton
DEL01	Collinsville
HAN01	Hannaford
HUG01	Hughenden
ING01	Inglewood
INN01	Innisfail
MDT01	Middlemount
MOR01	Mt Hope
OWN01	Mt Oweenee
RKY01	Mt Archer
ROM01	Mt Bassett
SPC01	Windorah
TSV01	Townsville
TTH01	Twin Hills
WBB01	Mt Perry
WCT01	Charters Towers
VHS06	Imbil
Channel 2	
GLD02	Gladstone
GLN02	Glenden
ING02	Mt Cordelia
JCK02	Julia Creek
LAU02	Laura
MAB02	Broadsound Range
MIN02	Glenlyon Dam
POR02	Drummond Range
SPC02	Bowen
TAM02	Tambo
TAR02	Taroom
TRN02	Quilpie
TWB02	Mt Kynoch
WAG02	Aranyi south
WAV02	Wavell Heights
WBR02	Gunalda
WON02	Cogango Range
Channel 3	
ABC03	Gold Coast
CHI03	Chinchilla
CTS03	Charters Towers
INK03	Mt Inkerman
KIL03	Kilcoy
LAI03	Mt Beau Brummell
MBO03	Tinana
MTO03	Monto
MTW03	Mt William
PCC03	Edward River
SPR03	Springsure
VHO3	Mt Isa
Channel 4	
BBG04	Sloping Hummock
DIP04	Double Island Point
EID04	Eidsvold
GDI04	Goondiwindi
HOP04	Rockhampton
IPS04	Ipswich
JER04	Jericho
MBH04	Moranbah
MOW04	Darling Downs
TSV04	Townsville
VHN4	Expedition Range
VHW4	Cannonvale
Channel 5	
	EMERGENCY REPEATERS
ABC05	Springbrook
BNE05	Mt Glorious
CEM05	Clermont
FSB05	Mt Goonaneman
GEM05	MtWolvi
ING05	Mt Cordelia
MIL05	Commodore Peak
QBM05	Darling Downs
ROK05	Rockhampton
VHN05	Charters Towers

VHP05 Biloela

Channel 6
BLK06 Blackdown Tablelands
BRA06 Sea View Range
CBT06 Mundubbera
CHT06 Mt Janet
CLE06 Police Mtn
CNE06 Bergen
DIM06 Mt north Iron
MIL06 Palardo Hill
MKY06 Mackay
PRR06 Clermont
RIC06 Yan Yean
TAM06 Tambo
THG06 Thargomindah
VHN06 Wilkes Knob

Channel 7
BIL07 Banana Range
BLL07 East of Blackall
BNE07 Toohey Mtn
CTR07 Towers Hill
DMD07 Clermont
ESK07 Esk
GEM07 Gympie (Portable)
IND07 Fraser Island
ING07 Mt Mercer
MUR07 Mt England
VHO7 Mt Hutton
WBB07 Mt Watalgan
WRA07 Warwick
YKA07 Mt Slowcombe

Channel 8
AMI08 Amiens
BAL08 Noondoo
BLL08 Blackall
CHN08 Mt Peanga
CHT08 Charters Towers
DAW08 Comminglah
EMD08 Emerald
HBY08 Ghost Hill
MBR08 Mt Brisbane
NCR08 Rockhampton
NEB08 Nebo
ONV08 Ocean View
TLD08 Atherton
VHN08 Barkly Down

SOUTH AUSTRALIA

Callsign Town/Locality

Channel 1
CDA01 Ceduna
MJN01 Oodnadatta
MTR01 Leigh Creek
PAR01 Adelaide (north)
PRC01 Carrieton (north of Orroroo)
TYN01 Oodnadatta
VLA3 Crystal Brook

Channel 2
BOR02 Bordertown
BRP02 Orroroo
CLV02 Cleve
MYP02 Myponga
VLA4 Kingoonya

Channel 3
ADL03 Adelaide (Central)
ALN03 Yunta
BLN03 Blinman, Flinders Ranges
CTR03 Moonta
KBY03 Port Elliot
UNO03 Port Augusta

Channel 4
BAR04 Nuriootpa
BLF04 Port Pirie
KOK04 Lake Gairdner west
NAR04 Lucindale
PKI04 Kangaroo Island / Leigh Creek (north-east of)

Channel 5
EMERGENCY REPEATERS
ADL05 Adelaide suburb
BEE05 Crystal Brook
EUD05 Eudunda
MNT05 west of Woomera
MTG05 Penola/Mt Gambier

Channel 6
LST06 Elliston (Eyre Peninsula)
NON06 120 km west of Port Augusta
REN06 Renmark
SNO06 Snowtown (near Port Pirie)
TIN06 Coonalpyn
WKI06 Kangaroo Island
WLG06 Tarcoola
WLP06 Willpena

Channel 7
CLR07 Clare
MTG07 MtGambier
MUT07 south of Cockburn
UNO07 Kyancutta
VLA7 Streaky Bay
WIL07 Hawker
YKP07 Warooka

Channel 8
BRYY08 Burra
GIL08 Port Giles, York Peninsula
MBV08 Murray Bridge
MTA08 Quorn
PTL08 Tumby Bay/Port Lincoln
Oodnadatta (200 km SW)
Yalata (187km NW Ceduna)
call? Coober Pedy

TASMANIA

Callsign Town/Locality

Channel 1
DEV01 Devonport
FIS01 Flinders Island
SET01 Mt Faulkner

Channel 2
CHN02 Herring Back
LCN02 Launceston
TWC02 Mt Read

Channel 3
NEC03 Ben Lomond

Channel 4
MID04 Millers Bluff
TWC04 Savage River

Channel 5
EMERGENCY REPEATERS
HBT05 Hobart
LTE05 Longford
TER05 Kentish

Channel 6
REC06 Mt Paul
VJA6 Mt Lloyd
WCT06 St Valentines Peak

Channel 7
CHT07 Barren Tier
TNE07 Mt Victoria

Channel 8
BRN08 Burnie
TNE08 St Marys

Simplex repeater
VSH13 Deloraine

VICTORIA

Callsign Town/Locality

Channel 1
ALX01 Eildon
APS01 Apsley
MEL01 Melboume
OME01 near Omeo
ROU01 Penshurst
STA01 St Arnaud
WAL01 Walhalla

Channel 2
BAL02 Ballarat
KER02 Mt Kerang
MAN02 Mansfield
MOE02 Moe
PYA02 Pyalong

Channel 3
ABE03 Aberfeldy
DEL03 Bombala
FAL03 Falls Creek
HOR03 Horsham
Melbourne
WBT03 Mt Wombat
WPH03 Weeaproinah
YLA03 Yelta

Channel 4
ARA04 Ararat
BEN04 Bendigo
CRJ04 Traralgon
HAW04 Hawkesdale
MCA04 Marambingo Hill
WOD04 Wodonga

Channel 5
EMERGENCY REPEATERS
BAL05 near Ballarat
MAN05 Mansfield
MEL05 Melboume
RFY05 Ruffy

Channel 6
BRN06 Mt Concorde
ECH06 Echuca
FOS06 Mt Fatigue
HLV06 Healesville
MSS06 Mt Seldom Seen
SWH06 Swan Hill
WAN06 Wangandry
WIL06 Mt William

Channel 7
BND07 near Bendigo
BOL07 Mt Bolton
MEL07 Melbourne
MOR07 Mt Shadwell
MVL07 Mt Gordon
SHP07 Shepparton
TAL07 Mt Granya

Channel 8
ART08 Safety Beach
DUN08 Cavendish
HAR08 Mt Alexander
MCN08 Mt Cann
MYR08 Mt Porepunkah
TER08 Mt Terrible

WESTERN AUSTRALIA

Callsign Town/Locality

Channel 1
COL01 Collie
DEN01 Denmark
GER01 Geraldton
KAM01 Kambalda
KAT01 Katanning
KLB01 Kellerberrin
LEN01 Leonora
MIA01 Mia Mia Station
MKT01 Poison Hills
PER01 Perth
WAR01 Warakuma
WIK01 Wickham

Channel 2
BIN02 Bindoon
BUN02 Near Bunbury
CAR02 Carnamah
KAL02 Mt Charlotte
LYN02 Lyndon Station
MRD02 Merredin
VLN5 Mt McLure
WLP02 Walpole

Channel 3
ALB03 Albany
CLA03 near Carlotta
NOR03 Nannup
PER03 Roleystone
VET03 near Bardoc

Channel 4
BYB04 Dinninup
ESP04 Esperance
GNG04 Lancelin
KUL04 Kulin
MTB04 Cranbrook
NEW04 Newman

Channel 5
EMERGENCY REPEATERS
MTR05 Mt Barker
PER05 Orange Grove
VLN6 Perth

Channel 6
DAR06 Darkan
JUR06 Mt Lesueur
MGR06 near Margaret River
MNP06 Albany
MTS06 Mt Solus
Vkm06 Wyalkatchem

Channel 7
BDG07 Bridgetown
C0007 Coolgardie
MGR07 Augusta
MTB07 Stirling Ranges
PIN07 Pinjarra east
VRK07 Mt Bakewell

Channel 8
MAN08 west Manjimup
MSA08 Mt Saddleback
PER08 Kalamunda
QUN08 Quinorlup
RVT08 Ravensthorpe

A.C.T.

Callsign Town/Locality

Channel 1
CBA01 Canberra (Portable)
Channel 2
CBA02 Isaacs Ridge
Channel 7
GIN07 Mt Ginini
Channel 8
CBA08 Isaacs Ridge

REPEATER UPDATE

To maintain the UHF repeater list in an up-to-date manner requires the co-operation of repeater owners and local users. Please ensure that when an error is found, or an update is required, that you contact:
Trevor Colwell, ACBRO Inc.,
PO Box 170,
Walkerville, South Australia 5081
who will ensure that this information is included in the next repeater list.

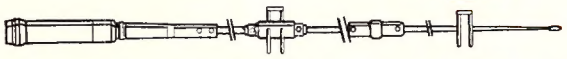
Next month: more amateur repeaters

High Quality Communications Equipment

ST-7500 2m/70cm Mobile Antenna

High-quality Japanese dual-band antenna, uses a ground-independent design and a tiltable stainless steel whip structure for excellent mobile results. Just 1m long, yet provides approximately 3dB gain on 2m and 5.5dB gain on 70cm with a maximum power rating of 150 watts. Requires an SO-239 antenna base or SO-239 magnetic base.

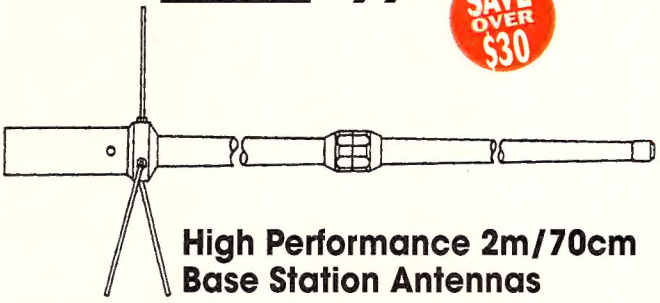
Cat D-4810 BRAINER **$59.95** SAVE $20



ST-7800 2m/70cm High-Gain Mobile

Our best long-range, dual-band mobile antenna providing high gain (4.5dB on 2m and 7.2dB on 70cm), while only 1.5m in length. Incorporates an inbuilt tilt-over mechanism and has a maximum power rating of 150 watts. Requires an SO-239 antenna base.

Cat D-4815 BRAINER **$99.50** SAVE OVER $30



High Performance 2m/70cm Base Station Antennas

Our range of top-name Brainer base station antennas offer outstanding quality and exceptional value. They are stacked collinear types providing high gain, wide bandwidth and a low radiation angle for extended range. The fibreglass reinforced polyester (FRP) outer tubing radome and gasket seals provide excellent all-weather operation, and they're supplied with compact ground-plane radials for a clean radiation pattern. Stainless-steel mounting hardware ensures a long, trouble-free life. Complete with instruction sheets to make installation and set-up easier.

Both come with a **1 YEAR WARRANTY**

2m/70cm GST-1

Frequency:	144-148MHz, 430-450MHz
Gain:	6dB on 2m, 8dB on 70cm
Max. Power:	200W
Length:	2.5m
Type:	2 x 5/8 wave (2m), 4 x 5/8 wave (70cm)
Connector:	SO-239 socket

Cat D-4830 **$169** SAVE $30

2m/70cm GST-3

Frequency:	144-148MHz, 430-440MHz
Gain:	7.9dB on 2m, 11.7dB on 70cm
Max. Power:	200W
Length:	4.4m
Type:	3 x 5/8 wave (2m), 7 x 5/8 wave (70cm)
Connector:	SO-239 socket

Cat D-4835 **$249** SAVE $50

BRAINER

Advanced Data Management Software

IBM PC software for easy programming of many functions of the latest Yaesu VHF/UHF transceivers. Consists of an interface (built into a serial port connector) and appropriate cabling to plug into the transceiver. Includes 3.5" floppy disk.

D-3752 ADMS-IC package suits FT-10R, 11R, 50R, 51R handhelds.

D-3757 ADMS-2B package suits FT-3000M and FT-8500.

$99.95 each

FT-8500 Deluxe 2m/70cm

YAESU

An exciting addition to the Yaesu mobile lineup, the FT-8500 2m/70cm FM transceiver introduces the advantages of a large remotable Omni-Glow™ display with all major controls on an easy to use hand microphone, and MIL-STD 810C ruggedness.

The FT-8500 provides three dual-band receive configurations (VHF+VHF, UHF+UHF, VHF+UHF), allowing cross-band full-duplex as well as standard single band operation. A unique Spectra-Analyzer™ with selectable channel and indicator widths shows station activity and relative signal strength above and below the current operating frequency or selected memory bank.

Simple menu programming with alphanumeric labelling also covers most transceiver functions. Other features include 110 memory channels, inbuilt CTCSS encoder, a 1200/9600 baud data socket for packet operation, Battery voltage readout, DTMF paging, and extensive scanning facilities. Supplied with MH-39 hand mic, DC power lead and instruction manual.

Specifications

Frequency Range:	Tx 144-148, 430-450MHz Rx 110-174, 300-500MHz
RF Output:	2m - 50, 10, 5W. 70cm - 35, 10, 5W
Sensitivity (Ham bands):	0.18uV (Main Rx), 0.25uV (Sub Rx)
Dimensions:	140 x 40 x 160mm (WHD)

Cat D-3318 **$1075**

2 YEAR WARRANTY

For further information, orders or the location of your nearest store, call:

1300 366 644 (Local call charge)

or Fax (02) 9805 1986

B 2659

DICK SMITH ELECTRONICS

Tough, Compact, Economical

Yaesu FT-50R 2m/70cm Handheld

For the foremost in top performing, durable, and economical dualband handhelds, there's now only one choice, Yaesu's amazing new FT-50R!

Manufactured to rigid commercial grade standards, the FT-50R provides 2m and 70cm band transceive coverage plus an amazingly wide receiver range (76-200, 300-540, 590-999MHz*), all in a compact package with water resistant construction that's tough enough to meet the USA MIL-STD-810 rating for shock and vibration resistance, yet is easy to hold and use.

Measuring just 57 x 99 x 30mm (WHD) with the supplied FNB-40 650mA/H Nicad pack, the FT-50R provides 2.0w RF output on the 2m and 70cm bands as standard, and can provide up to 5.0w output when operated from a 12v source (optional Nicad battery or vehicle lead). It also provides 112 memory channels including two Home memories, an Alphanumeric display for channel naming (ie. repeater locations or callsigns) with Omni-glow backlighting, and CTCSS encode for accessing repeaters that require a tone input. Selectable AM/FM receive modes allow for greater flexibility during extended receive operation.

For ease of use, the FT-50R provides super loud speaker output, an Auto Range Transpond System to determine if you are in range of another ARTS equipped transceiver, a Dual-watch system for monitoring sub-band activity, and four Battery saver systems for longer operating times. A selectable LCD voltmeter also allows you to monitor battery performance under load so you can estimate remaining battery life. You can also use the FT-50R with the optional ADMS-1C Windows based PC software/interface to quickly program features or clone programming to other compatible Yaesu radios.

The FT-50R is tough, easy to use, and one of the most economical dualband handhelds you can buy. There's now only one choice, the FT-50R from Yaesu.

(* Cellular blocked)

D-3655

YAESU

$599

2 year warranty

DICK SMITH ELECTRONICS

B 2659

WITH OUR RANGE, WE'RE TALKING SERIOUS PERFORMANCE TO SUIT EVERY POCKET.

For years now, the Icom range has delivered truly professional features and performance to the ever changing world of amateur radio.

Take the IC-706...this unit is a world first combining the compactness of a mobile rig with the features of a top class base station...all at a very affordable price. It covers HF plus the six and two metre bands, all modes, to offer the serious enthusiast the power and functions to compete with the big rigs.

And if you are looking for absolute top-of-the-line performance and features, check out the IC-775 DSP. From its amazing digitally processed signal to a superb array of features, this is a radio that is hard to better in any class.

Icom radios give you a remarkably wide choice...but whatever your budget, you can be sure the rig you buy will be precision built with the quality and innovation that keeps Icom clearly ahead.

IC-775DSP

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